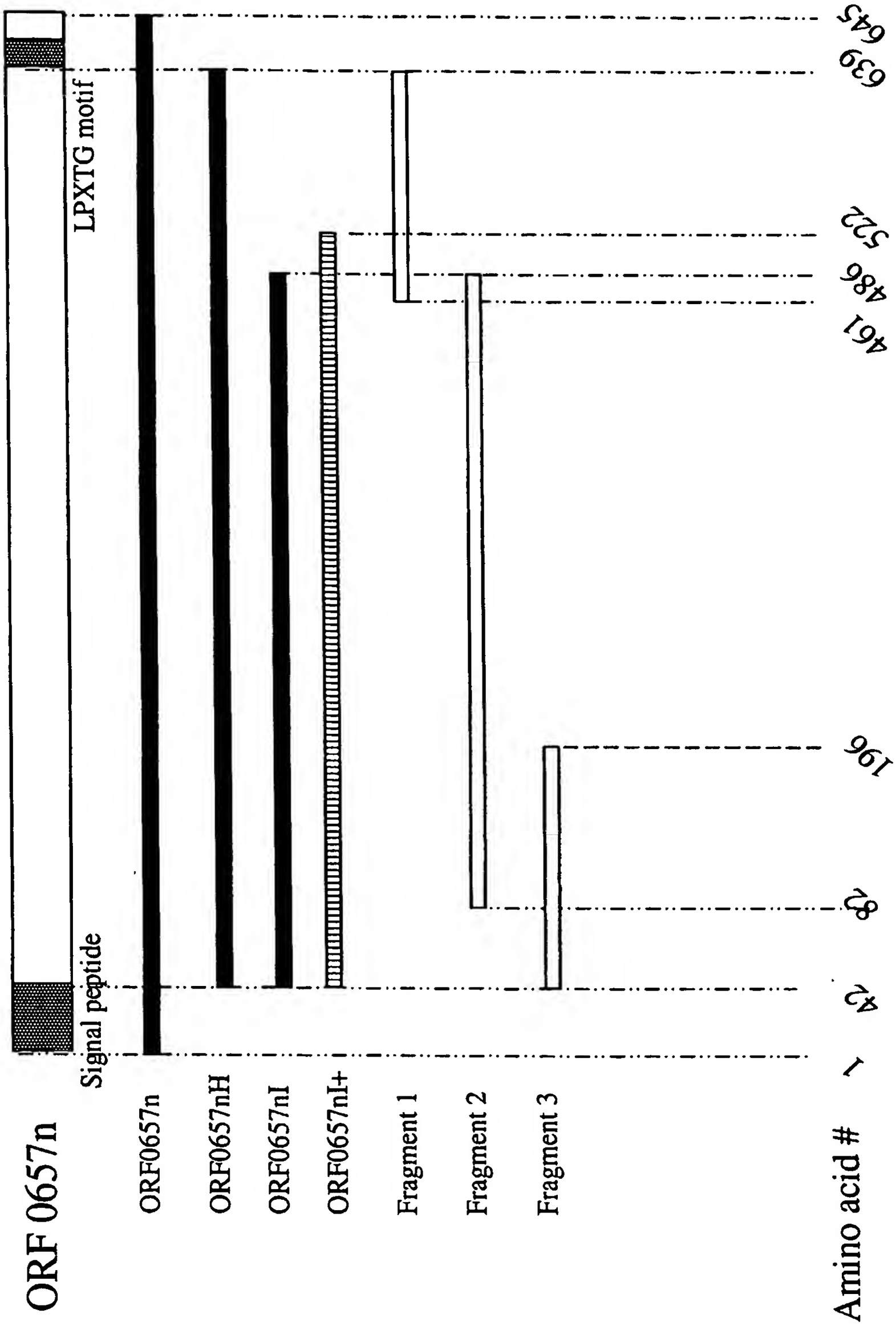

ORF 0657n
Signal peptide
LPXTG motif
ORF0657n
ORF0657nH
ORF0657nI
ORF0657nI+
Fragment 1
Fragment 2
Fragment 3
Amino acid #
1
42
82
196
461
486
522
639
645

FIG. 1A

MNKQQKEFKSFYSIRKSSLGVASVAISTLLLLMSNGEAQAAAEETGGTNTEAQPKTEAVASPTTTSEKAPETKPV
ANAVSVSNKEVEAPTSETKEAKEVKEVKAPKETKEVKPAAKATNNTYPILNQELREAIKNPAIKDKDHSAPNSRP
IDFEMKKKDGTQQFYHYASSVKPARVIFTDSKPEIELGLQSGQFWRKFEVYEGDKKLPIKLVSYDTVKDYAYIRF
SVSNGTKAVKIVSSTHFNNKEEKYDYTLMEFAQPIYNSADKFKTEEDYKAEKLLAPYKKAKTLERQVYELNKIQD
KLPEKLKAEYKKKLEDTKKALDEQVKSAITEFQNVQPTNEKMTDLQDTKYVVYESVENNESMMDTFVKHPIKTGM
LNGKKYMVMETTNDDYWKDFMVEGQRVRTISKDAKNNTRTIIFPYVEGKTLYDAIVKVHVKTIDYDGQYHVRIVD
KEAFTKANTDKSNKKEQQDNSAKKEATPATPSKPTPSPVEKESQKQDSQKDDNKQLPSVEKENDASSESGKDKTP
ATKPTKGEVESSSTTPTKVVSTTQNVAKPTTASSKTTKDVVQTSAGSSEAKDSAPLQKANIKNTNDGHTQSQNNK
NTQENKAKSLPQTGEESNKDMTLPLMALLALSSIVAFVLPRKRKN

FIG. 1B

MGNKQQKEFKSFYSIRKSSLGVASVAISTLLLLMSNGEAQAAAEETGGTNTEAQPKTEAVASPTTTSEKAPETKP
VANAVSVSNKEVEAPTSETKEAKEVKEVKAPKETKEVKPAAKATNNTYPILNQELREAIKNPAIKDKDHSAPNSR
PIDFEMKKKDGTQQFYHYASSVKPARVIFTDSKPEIELGLQSGQFWRKFEVYEGDKKLPIKLVSYDTVKDYAYIR
FSVSNGTKAVKIVSSTHFNNKEEKYDYTLMEFAQPIYNSADKFKTEEDYKAEKLLAPYKKAKTLERQVYELNKIQ
DKLPEKLKAEYKKKLEDTKKALDEQVKSAITEFQNVQPTNEKMTDLQDTKYVVYESVENNESMMDTFVKHPIKTG
MLNGKKYMVMETTNDDYWKDFMVEGQRVRTISKDAKNNTRTIIFPYVEGKTLYDAIVKVHVKTIDYDGQYHVRIV
DKEAFTKANTDKSNKKEQQDNSAKKEATPATPSKPTPSPVEKESQKQDSQKDDNKQLPSVEKENDASSESGKDKT
PATKPTKGEVESSSTTPTKVVSTTQNVAKPTTASSKTTKDVVQTSAGSSEAKDSAPLQKANIKNTNDGHTQSQNN
KNTQENKAKSLPQTGEESNKDMTLPLMALLALSSIVAFVLPRKRKNLEHHHHHH

FIG. 1C

MAEETGGTNTEAQPKTEAVASPTTTSEKAPETKPVANAVSVSNKEVEAPTSETKEAKEVKEVKAPKETKEVKPAA
KATNNTYPILNQELREAIKNPAIKDKDHSAPNSRPIDFEMKKKDGTQQFYHYASSVKPARVIFTDSKPEIELGLQ
SGQFWRKFEVYEGDKKLPIKLVSYDTVKDYAYIRFSVSNGTKAVKIVSSTHFNNKEEKYDYTLMEFAQPIYNSAD
KFKTEEDYKAEKLLAPYKKAKTLERQVYELNKIQDKLPEKLKAEYKKKLEDTKKALDEQVKSAITEFQNVQPTNE
KMTDLQDTKYVVYESVENNESMMDTFVKHPIKTGMLNGKKYMVMETTNDDYWKDFMVEGQRVRTISKDAKNNTRT
IIFPYVEGKTLYDAIVKVHVKTIDYDGQYHVRIVDKEAFTKANTDKSNKKEQQDNSAKKEATPATPSKPTPSPVE
KESQKQDSQKDDNKQLPSVEKENDASSESGK

FIG. 1D

```
                1                                                          60
ID3             -MAEETGGTNTEAQPKTEAVASP-TTTSEKAPETK----PVANAVSVSNKEVEAPTSETK
ID8             --AEETGGTNTEAQPKTEAVASP-TTTSEKAPETK----PVANAVSVSNKEVEAPTSETK
ID10            --AEETGGTNTEAQPKTEAVASP-TTTSEKAPETK----PVANAVSVSNKEVEAPTSETK
ID13            --AEETGGTNTEAQPKTEAVASP-TTTSEKAPETK----PVANAVSVSNKEVEAPTSETK
ID9             --AEETGGTNTEAQPKTEAVASP-TTTSEKAPETK----PVANAVSVSNKEVEAPTSETK
ID12            --AEETGGTNTEAQPKTEAVASP-TTTSEKAPETK----PVANAVSVSNKEVEAPTSETK
ID11            --AEETGGTNTEAQPKTEAVASP-TTTTEKAPEAK----PVANAVSVSNKEVEAPTSETK
ID15            --AEETGGTNTEAQPKTEAVASP-TTTTEKAPEAK----PVANAVSVSNKEVEAPTSETK
ID18            --AEETGGTNTEAQPKTEAVASP-TTTTEKAPEAK----PVANAVSVSNKEVEAPTSETK
ID16            --AEETGGTNTEAQPKTEAVASP-TTTTEKAPEAK----PVANAVSVSNKEVEAPTSETK
ID17            --AEETGGTNTEAQPKTEALASP-TTTTEKAPETK----PVANAVSVSNKEVEAPTSETK
ID20            --AEETGGTNTEAQPKTEAVASP-TTTSEKAPETK----PVANAVSVSNKEVEAPTSETK
ID19            --AEETGGTNTEAQPKTEAVASP-TTTSEKAPETK----PVANAVSVSNKEVEAPTSETK
ID14            --AEETGGTNTEAQPKTEAVASP-TTTSEKAPETK----PVANAVSVSNKEVEAPTSETK
ID4             MGAEETGGTNTEAQPKTEAVASP-TTTSEKAPETK----PVANAVSVSNKEVEAPTSETK
ID27            MGAEETGGTNTEAQPKTEAVASP-TTTSEKAPETK----PVANAVSVSNKEVEAPTSETK
ID1             -MAEETGGTNTEAQPKTEAVASP-TTTSEKAPETK----PVANAVSVSNKEVEAPTSETK
ID7             --AEETGGTNTEAQPKTEAVASP-TTTSEKAPETK----PVANAVSVSNKEVEAPTSETK
ID5             MGAEETGGTNTEAQPKTEAVASP-TTTSEKAPETK----PVANAVSVSNKEVEAPTSETK
ID6             --AEETGVTNTEAQPKTEAVASPTTTTTEKAPEAKPVAKPVANAVSVSNKEVVAPTTETK
ID22            --AEETGVTNTEAQPKTEAVASPTTTTTEKAPEAKPVAKPVANAVSVSNKEVVAPTTETK
ID21            --AEETGVTNTEAQPKTEAVASPTTTTTEKAPEAKPVAKPVANAVSVSNKEVVAPTTETK
ID23            --AEETGGTNTEAQPKTEAVASP-STTTEKAPEAK----PVANAVSVSNKEVEAPTSETK
ID24            --AEETGGTNTEAQPKTEAVASP-STTTEKAPEAK----PVANAVSVSNKEVEAPTSETK
ID26            --AEETGGTITETQPKTEAVASP-TTTTEKAPEAK----PVANAVSVSNKEVVAPTTETK
ID25            --AEETGGTITETQPKTEAVASP-TTTTEKAPEAK----PVANAVSVSNKEVAAPTTETK

                61                                                         120
ID3             EAKEVK---EVKAPKETKEVKPAAKATNNTYPILNQELREAIKNPAIKDKDHSAPNSRPI
ID8             EAKEVK---EVKAPKETKEVKPAAKATNNTYPILNQELREAIKNPAIKDKDHSAPNSRPI
ID10            EAKEVK---EVKAPKETKEVKPAAKATNNTYPILNQELREAIKNPAIKDKDHSAPNSRPI
ID13            EAKEVK---EVKAPKETKEVKPAAKATNNTYPILNQELREAIKNPAIKDKDHSAPNSRPI
ID9             EAKEVK---EVKAPKETKAVKPAAKATNNTYPILNQELREAIKNPAIKDKDHSAPNSRPI
ID12            EAKEVK---EVKAPKETKAVKPAAKATNNTYPILNQELREAIKNPAIKDKDHSAPNSRPI
ID11            EA---K---EVKAPKETKAVKPAAKADNNTYPILNQELREAIKNPAIKDKDHSAPNSRPI
ID15            EA---K---EVKAPKETKAVKPAAKADNNTYPILNQELREAIKNPAIKDKDHSAPNSRPI
ID18            EA---K---EVKAPKETKAVKPAAKADNNTYPILNQELREAIKNPAIKDKDHSAPNSRPI
ID16            EA---K---EVKAPKETKAVKPAAKADNNTYPILNQELREAIKNPAIKDKDHSAPNSRPI
ID17            EAKEVK---EVKAPKETKAVKPAAKADNNTYPILNQELREAIKNPAIKDKDHSAPNSRPI
ID20            EAKEVK---EVKAPKETKAVKPATKADNNTYPILNQELREAIKNPAIKDKDHSAPNSRPI
ID19            EAKEVK---EVKAPKETKAVKPATKADNNTYPILNQELREAIKNPAIKDKDHSAPNSRPI
ID14            EAKEVK---EVKAPKETKEVKPAAKATNNTYPILNQELREAIKNPEIKDKDHSAPNSRPI
ID4             EAKEVK---EVKAPKETKEVKPAAKATNNTYPILNQELREAIKNPAIKDKDHSAPNSRPI
ID27            EAKEVK---EVKAPKETKEVKPAAKATNNTYPILNQELREAIKNPAIKDKDHSAPNSRPI
ID1             EAKEVK---EVKAPKETKEVKPAAKATNNTYPILNQELREAIKNPAIKDKDHSAPNSRPI
ID7             EAKEVK---EVKAPKETKEVKPAAKATNNTYPILNQELREAIKNPAIKDKDHSAPNSRPI
ID5             EAKEVK---EVKAPKETKEVKPAAKATNNTYPILNQELREAIKNPAIKDKDHSAPNSRPI
ID6             EAKEVKAVKEVKAPKEAKEEKPAAKADNNTYPILNQELREAIKNPAIKDKDHSAPNSRPI
ID22            EAKEVKAVKEVKAPKEAKEEKPAAKADNNTYPILNQELREAIKNPAIKDKDHSAPNSRPI
ID21            EAKEVKAVKEVKAPKEAKEEKPAAKADNNTYPILNQELREAIKNPAIKDKDHSAPNSRPI
ID23            EAKEVK---EVKAPKETKEVKPATKADNNTYPILNQELREAIKNPAIKDKDHSAPNSRPI
ID24            EAKEVK---EVKAPKETKEVKPATKADNNTYPILNQELREAIKNPAIKDKDHSAPNSRPI
ID26            EAKEVK---EVKAPNETKEVKPAAKSDNNTYPILNEELREAIKNPAIKDKDHSAPNSRPI
ID25            EAKEVK---EVKAPNETKEVKPAAKSDNNTYPILNEELREAIKNPAIKDKDHSAPNSRPI
```

FIG. 2A

	121 … 180
ID3	DFEMKKKDGTQQFYHYASSVKPARVIFTDSKPEIELGLQSGQFWRKFEVYEGDKKLPIKL
ID8	DFEMKKKDGTQQFYHYASSVKPARVIFTDSKPEIELGLQSGQFWRKFEVYEGDKKLPIKL
ID10	DFEMKKKDGTQQFYHYASSVKPARVIFTDSKPEIELGLQSGQFWRKFEVYEGDKKLPIKL
ID13	DFEMKKKDGTQQFYHYASSVKPARVIFTDSKPEIELGLQSGQFWRKFEVYEGDKKLPIKL
ID9	DFEMKKENGEQQFYHYASSVKPARVIFTDSKPEIELGLQSGQFWRKFEVYEGDKKLPIKL
ID12	DFEMKKENGEQQFYHYASSVKPARVIFTDSKPEIELGLQSGQFWRKFEVYEGDKKLPIKL
ID11	DFEMKKENGEQQFYHYASSVKPARVIFTDSKPEIELGLQSGQFWRKFEVYEGDKKLPIKL
ID15	DFEMKKENGEQQFYHYASSVKPARVIFTDSKPEIELGLQSGQFWRKFEVYEGDKKLPIKL
ID18	DFEMKKENGEQQFYHYASSVKPARVIFTDSKPEIELGLQSGQFWRKFEVYEGDKKLPIKL
ID16	DFEMKKENGEQQFYHYASSVKPARVIFTDSKPEIELGLQSGQFWRKFEVYEGDKKLPIKL
ID17	DFEMKKENGEQQFYHYASSVKPARVIFTDSKPEIELGLQSGQFWRKFEVYEGDKKLPIKL
ID20	DFEMKKENGEQQFYHYASSVKPARVIFTDSKPEIELGLQSGQFWRKFEVYEGDKKLPIKL
ID19	DFEMKKENGEQQFYHYASSVKPARVIFTDSKPEIELGLQSGQFWRKFEVYEGDKKLPIKL
ID14	DFEMKKKDGTQQFYHYASSVKPARVIFTDSKPEIELGLQSGQFWRKFEVYEGDKKLPIKL
ID4	DFEMKKKDGTQQFYHYASSVKPARVIFTDSKPEIELGLQSGQFWRKFEVYEGDKKLPIKL
ID27	DFEMKKKDGTQQFYHYASSVKPARVIFTDSKPEIELGLQSGQFWRKFEVYEGDKKLPIKL
ID1	DFEMKKKDGTQQFYHYASSVKPARVIFTDSKPEIELGLQSGQFWRKFEVYEGDKKLPIKL
ID7	DFEMKKKDGTQQFYHYASSVKPARVIFTDSKPEIELGLQSGQFWRKFEVYEGDKKLPIKL
ID5	DFEMKKKDGTQQFYHYASSVKPARVIFTDSKPEIELGLQSGQFWRKFEVYEGDKKLPIKL
ID6	DFEMKKKDGTQQFYHYASSVKPARVIFTDSKPEIELGLQSGQFWRKFEVYEGDKKLPIKL
ID22	DFEMKKKDGTQQFYHYASSVKPARVIFTDSKPEIELGLQSGQFWRKFEVYEGDKKLPIKL
ID21	DFEMKKKDGTQQFYHYAGSVKPARVIFTDSKPEIELGLQSGQFWRKFEVYEGDKKLPIKL
ID23	DFEMKKKDGTQQFYHYASSVKPARVIFTDSKPEIELGLQSGQFWRKFEVYEGNKKLPIKL
ID24	DFEMKKKDGTQQFYHYASSVKPARVIFTDSKPEIELGLQSGQFWRKFEVYEGNKKLPIKL
ID26	DFEMKKKDGTQQFYHYASSVKPARVIFTDSKPEIELGLQSGQFWRKFEVYEGDKKLPIKL
ID25	DFEMKKKDGTQQFYHYASSVKPARVIFTDSKPEIELGLQSGQFWRKFEVYEGDKKLPIKL

	181 … 240
ID3	VSYDTVKDYAYIRFSVSNGTKAVKIVSSTHFNNKEEKYDYTLMEFAQPIYNSADKFKTEE
ID8	VSYDTVKDYAYIRFSVSNGTKAVKIVSSTHFNNKEEKYDYTLMEFAQPIYNSADKFKTEE
ID10	VSYDTVKDYAYIRFSVSNGTKAVKIVSSTHFNNKEEKYDYTLMEFAQPIYNSADKFKTEE
ID13	VSYDTVKDYAYIRFSVSNGTKAVKIVSSTHFNNKEEKYDYTLMEFAQPIYNSADKFKTEE
ID9	VSYDTVKDYAYIRFSVSNGTKAVKIVSSTHFNNKEEKYDYTLMEFAQPIYNSADKFKTEE
ID12	VSYDTVKDYAYIRFSVSNGTKAVKIVSSTHFNNKEEKYDYTLMEFAQPIYNSADKFKTEE
ID11	VSYDTVKDYAYIRFSVSNGTKAVKIVSSTHFNNKEEKYDYTLMEFAQPIYNSADKFKTEE
ID15	VSYDTVKDYAYIRFSVSNGTKAVKIVSSTHFNNKEEKYDYTLMEFAQPIYNSADKFKTEE
ID18	VSYDTVKDYAYIRFSVSNGTKAVKIVSSTHFNNKEEKYDYTLMEFAQPIYNSADKFKTEE
ID16	VSYDTVKDYAYIRFSVSNGTKAVKIVSSTHFNNKEEKYDYTLMEFAQPIYNSADKFKTEE
ID17	VSYDTVKDYAYIRFSVSNGTKAVKIVSSTHFNNKEEKYDYTLMEFAQPIYNSADKFKTEE
ID20	VSYDTVKDYAYIRFSVSNGTKAVKIVSSTHFNNKEEKYDYTLMEFAQPIYNSADKFKTEE
ID19	VSYDTVKDYAYIRFSVSNGTKAVKIVSSTHFNNKEEKYDYTLMEFAQPIYNSADKFKTEE
ID14	ASYDTVKDYAYIRFSISNGTKAVKIVSSTHFNNKEEKYDYTLMEFAQPIYNSADKFKTEE
ID4	VSYDTVKDYAYIRFSVSNGTKAVKIVSSTHFNNKEEKYDYTLMEFAQPIYNSADKFKTEE
ID27	VSYDTVKDYAYIRFSVSNGTKAVKIVSSTHFNNKEEKYDYTLMEFAQPIYNSADKFKTEE
ID1	VSYDTVKDYAYIRFSVSNGTKAVKIVSSTHFNNKEEKYDYTLMEFAQPIYNSADKFKTEE
ID7	VSYDTVKDYAYIRFSVSNGTKAVKIVSSTHFNNKEEKYDYTLMEFAQPIYNSADKFKTEE
ID5	VSYDTVKDYAYIRFSVSNGTKAVKIVSSTHFNNKEEKYDYTLMEFAQPIYNSADKFKTEE
ID6	VSYDTVKDYAYIRFSVSNGTKAVKIVSSTHFNNKEEKYDYTLMEFAQPIYNSADKFKTEE
ID22	VSYDTVKDYAYIRFSVSNGTKAVKIVSSTHFNNKEEKYDYTLMEFAQPIYNSADKFKTEE
ID21	VSYDTVKDYAYIRFSVSNGTKAVKIVSSTHFNNKEEKYDYTLMEFAQPIYNSADKFKTEE
ID23	VSYDTVKDYAYIRFSVSNGTKAVKIVSSTHFNNKEEKYDYTLMEFAQPIYNSAGKFKTEE
ID24	VSYDTVKDYAYIRFSVSNGTKAVKIVSSTHFNNKEEKYDYTLMEFAQPIYNSADKFKTEE
ID26	VSYDTVKDYAYIRFSVSNGTKAVKIVSSTHFNNKEEKYDYTLMEFAQPIYNSADKFKTEE
ID25	VSYDTVKDYAYIRFSVSNGTKAVKIVSSTHFNNKEEKYDYTLMEFAQPIYNSADKFKTEE

FIG. 2B

	241 … 300
ID3	DYKAEKLLAPYKKAKTLERQVYELNKIQDKLPEKLAEYKKKLEDTKKALDEQVKSAITE
ID8	DYKAEKLLAPYKKAKTLERQVYELNKIQDKLPEKLAEYKKKLEDTKKALDEQVKSAITE
ID10	DYKAEKLLAPYKKAKTLERQVYELNKIQDKLPEKLAEYKKKLEDTKKALDEQVKSAITE
ID13	DYKAEKLLAPYKKAKTLERQVYELNKIQDKLPEKLAEYKKKLEDTKKALDEQVKSAITE
ID9	DYKAEKLLAPYKKAKTLERQVYELNKIQDKLPEKLAEYKKKLEDTKKALDEQVKSAITE
ID12	DYKAEKLLAPYKKAKTLERQVYELNKIQDKLPEKLAEYKKKLEDTKKALDEQVKSAITE
ID11	DYKAEKLLAPYKKAKTLERQVYELNKIQDKLPEKLAEYKKKLEDTKKALDEQVKSAITE
ID15	DYKAEKLLAPYKKAKTLERQVYELNKIQDKLPEKLAEYKKKLEDTKKALDEQVKSAITE
ID18	DYKAEKLLAPYKKAKTLERQVYELNKIQDKLPEKLAEYKKKLEDTKKALDEQVKSAITE
ID16	DYKAEKLLAPYKKAKTLERQVYELNKIQDKLPEKLAEYKKKLEDTKKALDEQVKSAITE
ID17	DYKAEKLLAPYKKAKTLERQVYELNKIQDKLPEKLAEYKKKLEDTKKALDEQVKSAITE
ID20	DYKAEKLLAPYKKAKTLERQVYELNKIQDKLPEKLAEYKKKLEDTKKALDEQVKSAITE
ID19	DYKAEKLLAPYKKAKTLERQVYELNKIQDKLPEKLAEYKKKLEDTKKALDEQVKSAITE
ID14	DYKAEKLLAPYKKAKTLERQVYELNKIQDKLPEKLAEYKKKLEDTKKALDEQVKSAITE
ID4	DYKAEKLLAPYKKAKTLERQVYELNKIQDKLPEKLAEYKKKLEDTKKALDEQVKSAITE
ID27	DYKAEKLLAPYKKAKTLERQVYELNKIQDKLPEKLAEYKKKLEDTKKALDEQVKSAITE
ID1	DYKAEKLLAPYKKAKTLERQVYELNKIQDKLPEKLAEYKKKLEDTKKALDEQVKSAITE
ID7	DYKAEKLLAPYKKAKTLERQVYELNKIQDKLPEKLAEYKKKLEDTKKALDEQVKSAITE
ID5	DYKAEKLLAPYKKAKTLERQVYELNKIQDKLPEKLAEYKKKLEDTKKALDEQVKSAITE
ID6	DYKAEKLLAPYKKAKTLERQVYELNKIQDKLPEKLAEYKKKLEETKKALDEQVKSAITE
ID22	DYKAEKLLAPYKKAKTLERQVYELNKIQDKLPEKLAEYKKKLEETKKALDEQVKSAITE
ID21	DYKAEKLLAPYKKAKTLERQVYELNKIQDKLPEKLAEYKKKLEETKKALDEQVKSAITE
ID23	DYKAEKLLSPYKKAKTLERQVYELNKIQDKLPEKLAEYKKKLEETKKALDEQVKSAITE
ID24	DYKAEKLLSPYKKAKTLERQVYELNKIQDKLPEKLAEYKKKLEETKKALDEQVKSAITE
ID26	DYKAEKLLAPYKKAKTLERQVYELNKIQDKLPEKLAEYKKKLEETKKALDEQVKSAITE
ID25	DYKAEKLLAPYKKAKTLERQVYELNKIQDKLPEKLAEYKKKLEETKKALDEQVKSAITE

	301 … 360
ID3	FQNVQPTNEKMTDLQDTKYVVYESVENNESMMDTFVKHPIKTGMLNGKKYMVMETTNDDY
ID8	FQNVQPTNEKMTDLQDTKYVVYESVENNESMMDTFVKHPIKTGMLNGKKYMVMETTNDDY
ID10	FQKVQPTNEKMTDLQDTKYVVYESVENNESMMDTFVKHPIKTGMLNGKKYMVMETTNDDY
ID13	FQNVQPTNEKMTDLQDTKYVVYESVENNESMMDTFVKHPIKTGMLNGKKYMVMETTNDDY
ID9	FQNVQPTNEKMTDLQDTKYVVYESVENNESMMDTFVKHPIKTGMLNGKKYMVMETTNDDY
ID12	FQNVQPTNEKMTDLQDTKYVVYESVENNESMMDTFVKHPIKTGMLNGKKYMVMETTNDDY
ID11	FQNVQPTNEKMTDLQDTKYVVYESVENNESMMDTFVKHPIKTGMLNGKKYMVMETTNDDY
ID15	FQNVQPTNEKMTDLQDTKYVVYESVENNESMMDTFVKHPIKTGMLNGKKYMVMETTNDDY
ID18	FQNVQPTNEKMTDLQDTKYVVYESVENNESMMDTFVKHPIKTGMLNGKKYMVMETTNDDY
ID16	FQNVQPTNEKMTDLQDTKYVVYESVENNESMMDTFVKHPIKTGMLNGKKYMVMETTNDDY
ID17	FQNVQPTNEKMTDLQDTKYVVYESVENNESMMDTFVKHPIKTGMLNGKKYMVMETTNDDY
ID20	FQNVQPTNEKMTDLQDTKYVVYESVENNESMMDTFVKHPIKTGMLNGKKYMVMETTNDDY
ID19	FQNVQPTNEKMTDLQDTKYVVYESVENNESMMDTFVKHPIKTGMLNGKKYMVMETTNDDY
ID14	FQNVQPTNEKMTDLQDTKYVVYESVENNESMMDTFVKHPIKTGMLNGKKYMVMETTNDDY
ID4	FQNVQPTNEKMTDLQDTKYVVYESVENNESMMDTFVKHPIKTGMLNGKKYMVMETTNDDY
ID1	FQNVQPTNEKMTDLQDTKYVVYESVENNESMMDTFVKHPIKTGMLNGKKYMVMETTNDDY
ID27	FQNVQPTNEKMTDLQDTKYVVYESVENNESMMDTFVKHPIKTGMLNGKKYMVMETTNDDY
ID7	FQNVQPTNEKMTDLQDTKYVVYESVENNESMMDTFVKHPIKTGMLNGKKYMVMETTNDDY
ID5	FQNVQPTNEKMTDLQDTKYVVYESVENNESMMDTFVKHPIKTGMLNGKKYMVMETTNDDY
ID6	FQNVQPTNEKMTDLQDTKYVVYESVENNESMMDAFVKHPIKTGMLNGKKYMVMETTNDDY
ID22	FQNVQPTNEKMTDLQDTKYVVYESVENNESMMDTFVKHPIKTGMLNGKKYMVMETTNDDY
ID21	FQNVQPTNEKMTDLQDTKYVVYESVENNESMMDTFVKHPIKTGMLNGKKYMVMETTNDDY
ID23	FQNVQPTNEKMTDLQDTKYVVYESVENNESMMDTFVKHPIKTGMLNGKKYMVMETTNDDY
ID24	FQNVQPTNEKMTDLQDTKYVVYESVENNESMMDTFVKHPIKTGMLNGKKYMVMETTNDDY
ID26	FQNVQPTNEKMTDLQDTKYVVYESVENNESMMDTFVKHPIKTGMLNGKKYMVMETTNDDY
ID25	FQNVQPTNEKMTDLQDTKYVVYESVENNESMMDTFVKHPIKTGMLNGKKYMVMETTNDDY

FIG. 2C

```
      361                                                         420
ID3   WKDFMVEGQRVRTISKDAKNNTRTIIFPYVEGKTLYDAIVKVHVKTIDYDGQYHVRIVDK
ID8   WKDFMVEGQRVRTISKDAKNNTRTIIFPYVEGKTLYDAIVKVHVKTIDYDGQYHVRIVDK
ID10  WKDFMVEGQRVRTISKDAKNNTRTIIFPYVEGKTLYDAIVKVHVKTIDYDGQYHVRIVDK
ID13  WKDFMVEGQRVRTISKDAKNNTRTIIFPYVEGKTLYDAIVKVHVKTIDYDGQYHVRIVDK
ID9   WKDFMVEGQRVRTISKDAKNNTRTIIFPYVEGKTLYDAIVKVHVKTIDYDGQYHVRIVDK
ID12  WKDFMVEGQRVRTISKDAKNNTRTIIFPYVEGKTLYDAIVKVHVKTIDYDGQYHVRIVDK
ID11  WKDFMVEGQRVRTISKDAKNNTRTIIFPYVEGKTLYDAIVKVHVKTIDYDGQYHVRIVDK
ID15  WKDFMVEGQRVRTISKDAKNNTRTIIFPYVEGKTLYDAIVKVHVKTIDYDGQYHVRIVDK
ID18  WKDFMVEGQRVRTISKDAKNNTRTIIFPYVEGKTLYDAIVKVHVKTIDYDGQYHVRIVDK
ID16  WKDFMVEGQRVRTISKDAKNNTRTIIFPYVEGKTLYDAIVRVHVKTIDYDGQYHVRIVDK
ID17  WKDFMVEGQRVRTISKDAINNTRTIIFPYVEGKTLYDAIVKVHVKTIDYDGQYHVRIVDK
ID20  WKDFMVEGQRVRTISKDAKNNTRTIIFPYVEGKTLYDAIVKVHVKTIDYDGQYHVRIVDK
ID19  WKDFMVEGQRVRTISKDAKNNTRTIIFPYVEGKTLYDAIVKVHVKTIDYDGQYHVRIVDK
ID14  WKDFMVEGQRVRTISKDAKNNTRTIIFPYVEGKTLYDAIVKVHVKTIDYDGQYHVRIVDK
ID4   WKDFMVEGQRVRTISKDAKNNTRTIIFPYVEGKTLYDAIVKVHVKTIDYDGQYHVRIVDK
ID27  WKDFMVEGQRVRTISKDAKNNTRTIIFPYVEGKTLYDAIVKVHVKTIDYDGQYHVRIVDK
ID1   WKDFMVEGQRVRTISKDAKNNTRTIIFPYVEGKTLYDAIVKVHVKTIDYDGQYHVRIVDK
ID7   WKDFMVEGQRVRTISKDAKNNTRTIIFPYVEGKTLYDAIVKVHVKTIDYDGQYHVRIVDK
ID5   WKDFMVEGQRVRTISKDAKNNTRTIIFPYVEGKTLYDAIVKVHVKTIDYDGQYHVRIVDK
ID6   WKDFMVEGQRVRTISKDAKNNTRTIIFPYVEGKTLYDAIVKVHVKTIDYDGQYHVRIVDK
ID22  WKDFMVEGQRVRTISKDAKNNTRTIIFPYVEGKTLYDAIVKVHVKTIDYDGQYHVRIVDK
ID21  WKDFMVEGQRVRTISKDAKNNTRTIIFPYVEGKTLYDAIVKVHVKTIDYDGQYHVRIVDK
ID23  WKDFMVEGQRVRTISKDAKNNTRTIIFPYVEGKTLYDAIVKVHVKTIDYDGQYHVRIVDK
ID24  WKDFMVEGQRVRTISKDAKNNTRTIIFPYVEGKTLYDAIVKVHVKTIDYDGQYHVRIVDK
ID26  WKDFMVEGERVRTISKDAKNNTRTIIFPYVEGKTLYDAIVKVHVKTIDYDGQYHVRIVDK
ID25  WKDFMVEGERVRTISKDAKNNTRTIIFPYVEGKTLYDAIVKVHVKTIDYDGQYHVRIVDK

      421                                                         480
ID3   EAFTKANTDKSNKKEQQDNSAKKEATPATPSKPTPSPVEKESQKQDSQKDDNKQLPSVEK
ID8   EAFTKANTDKSNKKEQQDNSAKKEATPATPSKPTPSPVEKESQKQDSQKDDNKQLPSVEK
ID10  EAFTKANTDKSNKKEQQDNSAKKEATPATPSKPTPSPVEKESQKQDSQKDDNKQLPSVEK
ID13  EAFTKANTDKSNKKEQQDNSAKKEATPATPSKPTPSPVEKESQKQDSQKDDNKQLPSVEK
ID9   EAFTKANTDKSNKKEQQDNSAKKEATPATPSKPTPSPVEKESQKQDSQKDDNKQLPSVEK
ID12  EAFTKANTDKSNKKEQQDNSAKKEATPATPSKPTPSPVEKESQKQDSQKDDNKQLPSVEK
ID11  EAFTKANTDKSNKKEQQDNSAKKEATPATPSKPTPSPVEKESQKQDSQKDDNKQLPSVEK
ID15  EAFTKANTDKSNKKEQQDNSAKKEATPATPSKPTPSPVEKESQKQDSQKDDNKQLPSVEK
ID18  EAFTKANTDKSNKKEQQDNSAKKEATPATPSKPTPSPVEKESQKQDSQKDDNKPLPSVEK
ID16  EAFTKANTDKSNKKEQQDNSAKKEATPATPSKPTPSPVEKESQKQDSQKDDNKQLPSVEK
ID17  EAFTKANTDKSNKKEQQDNSAKKEATPATPSKPTPSPVEKESQKQDSQKDDNKQLPSVEK
ID20  EAFTKANTDKSNKKEQQDNSAKKEATPATPSKPTPSPVEKESQKQDSQKDDNKQLPSVEK
ID19  EAFTKANTDKSNKKEQQDNSAKREATPATPSKPTPSPVEKESQKQDSQKDDNKQLPSVEK
ID14  EAFTKANTDKSNKKEQQDNSAKKEATPATPSKPTPSPVEKESQKQDSQKDDNKQLPSVEK
ID4   EAFTKANTDKSNKKEQQDNSAKKEATPATPSKPTPSPVEKESQKQDSQKDDNKQLPSVEK
ID27  EAFTKANTDKSNKKEQQDNSAKKEATPATPSKPTPSPVEKESQKQDSQKDDNKQLPSVEK
ID1   EAFTKANTDKSNKKEQQDNSAKKEATPATPSKPTP-------------------------
ID7   EAFTKANTDKSNKKEQQDNSAKKEATPATPSKPTPSPVEKESQKQDSQKDDNKQLPSVEK
ID5   EAFTKANTDKSNKKEQQDNSAKKEATPATPSKPTP-------------------------
ID6   EAFTKANADKTNKKEQQDNSAKKETTPAMPSKPTTPPVEKESQKQDSQKDDNKQSPSVEK
ID22  EAFTKANADKTNKKEQQDNSAKKETTPAMPSKPTTPPVEKESQKQDSQKDDNKQSPSVEK
ID21  EAFTKANADKTNKKEQQDNSAKKETTPAMPSKPTTPPVEKESQKQDSQKDDNKQSPGVEK
ID23  EAFTKANADKSNKKEQQDNSAKKETTPATPSKPTTPPVEKESQKQDSQKDDNKQSPSVEK
ID24  EAFTKANADKSNKKEQQDNSAKKETTPATPSKPTTPPVEKESQKQDSQKDDNKQSPSVEK
ID26  EAFTKANADKSNKKEQQDNSAKKEATPATPSKPTTAPVEKESQKQDSQKDDNKQSPSVEK
ID25  EAFTKANADKSNKKEQQDNSAKKETTPATPSKPTTAPVEKESQKQDSQKDDNKQSPSVEK
```

FIG. 2D

```
      481                                                        540
ID3   ENDASSESGKDKTPATKPTKGEVESSSTTPTKVVSTTQNVAKPTTASSKTTKDVVQTSAG
ID8   ENDASSESGKDKTPATKPTKGEVESSSTTPTKVVSTTQNVAKPTTASSKTTKDVVQTSAG
ID10  ENDASSESGKDKTPATKPTKGEVESSSTTPTKVVSTTQNVAKPTTASSKTTKDVVQTSAG
ID13  ENDASSESGKDKTPATKPTKGKVESSSTTPTKVVSTTQNVAKPTTASSKTTKDVVQTSAG
ID9   ENDASSESGKDKTPATKPTKGEVESSSTTPTKVVSTTQNVAKPTTASSKTTKDVVQTSAG
ID12  ENDASSESGKDKTPATKPTKGEVESS-TTPTKVVSTTQNVAKP-TASSKTTKDVVQTSAG
ID11  ENDASSESGKDKTPATKPAKGEVESSSTTPTKVVSTTQNVAKPTTASSKTTKDVVQTSAS
ID15  ENDASSESGKDKTPATKPAKGEVESSSTTPTKVVSTTQNVAKP-TASSKTTKDVVQTSAS
ID18  ENDASSESGKDKTPATKPAKGEVESSSTTPTKVVSTTQNVAKPTTASSKTTKDVVQTSAS
ID16  ENDASSESGKDKTPATKPAKGEVESSSTTPTKVVSTTQNVAKPTTASSKTTKDVVQTSAG
ID17  ENDASSESGKDKTPATKPAKGEVESSSTTPTKVVSTTQNVAKPTTASSKTTKDVVQTSAG
ID20  ENDASSESGKDKTPATKPAKGEVESSSTTPTKVVSTTQNVAKPTTASSKTTKDVVQTSAG
ID19  ENDASSESGKDKTPATKPAKGEVESSSTTPTKVVSTTQNVAKPTTASSKTTKDVVQTSAG
ID14  ENDASSESGKDKTPATKPAKGEVESSSTTPTKVVSTTQNVVKPTTASSKTTKDVVQTSAG
ID4   ENDASSESGKDKTPATKPTKGEVESSSTTPTKVVSTTQNVAKPTTASSKTTKDVVQTSAG
ID27  ENDASSESGKGVTLATKPTKGEVESSSTTPTKVVSTTQNVAKPTTGSSKTTKDVVQTSAG
ID1   ------------------------------------------------------------
ID7   ENDASSESGKGVTLATKPTKGEVESSSTTPTKVVSTTQNVAKPTTGSSKTTKDVVQTSAG
ID5   ------------------------------------------------------------
ID6   ENDASSESGKDKMPVTKPAKAEVESSSTTPTKVVSTTQNVAKPTTASSETTKDVVQTSAG
ID22  ENDASSESGKDKMPVTKPAKAEVESSSTTPTKVVSTTQNVAKPTTASSETTKDVVQTSAG
ID21  ENDASSESGKDKMPVTKPAKAEVESSSTTPTKVVSTTQNVAKPTTASSETTKDVVQTSAG
ID23  ENDASSESGKDKTPTTKPAKAEVESSSTTPTKVVSTTQNVAKPTTASSETTIDVVQTSAG
ID24  ENDASSESGKDKTPATKPAKAEVESSSTTPTKVVSTTQNVAKPTTASSETTIDVVQTSAG
ID26  EIDASSESGKDKTPATKPAKGEVESSSTTPTKVVSATQNVAKPTSASSETTKGVVQTSAG
ID25  EIDASSESGKDKTPATKPAKGEVESSSTTPTKVVSATQNVAKPTSASSETTKGVVQTSAG

      541                                          586
ID3   SSEAKDSAPLQKANIKNTNDGHTQSQNNKNTQENKAKS--------
ID8   SSEAKDSAPLQKANIKNTNDGHTQSQNNKNTQENKAKS--------
ID10  SSEAKDSAPLQKANIKNTNDGHTQSQNNKNTQENKAKS--------
ID13  SSEAKDSAPLQKANIKNTNDGHTQSQNNKNTQENKAKS--------
ID9   SSEAKDSAPLQKANIKNTNDGHTQSQNNKNTQENKAKS--------
ID12  SSEAKDSAPLQKANIKNTNDGHTQSQNNKNTQENKAKS--------
ID11  SSEAKDSAPLQKANIKNTNDGHTQSQNNKNTQENKAKS--------
ID15  SSEAKDSAPLQKANIKNTNDGHTQSQNNKNTQENKAKS--------
ID18  SSEAKDSAPLQKANIKNTNDGHTQSQNNKNTQENKAKS--------
ID16  SSEAKDSAPLQKANIKNTNDGHTQSQNNKNTQENKAKS--------
ID17  SSEAKDSAPLQKANIKNTNDGHTQSQNNKNTQENKAKS--------
ID20  SSEAKDSAPLQKANIKNTNDGHTQSQNNKNTQENKAKS--------
ID19  SSEAKDSAPLQKANIKNTNDGHTQSQNNKNTQENKAKS--------
ID14  SSEAKDSAPLQKANIKNTNDGHTQSQNNKNTQENKAKS--------
ID4   SSEAKDSAPLQKANIKNTNDGHTQSQNNKNTQENKAKS--------
ID27  SSEAKDSAPLQKANIKHTNDGHTQSQNNKNTQENKAKS--------
ID1   ----------------------------------------------
ID7   SSEAKDSAPLQKANIKHTNDGHTQSQNNKNTQENKAKS--------
ID5   ----------------------------------------------
ID6   SSEAKDSAPLQKANIKNTNDGHTQSQNNKNTQENKAKS--------
ID22  SSEAKDSAPLQKANIKNTNDGHTQSQNNKNTQENKAKS--------
ID21  SSEAKDSAPLQKANIKNTNDGHTQSQNNKNTQENKAKS--------
ID23  SSEAKDSAPLQKANIKNTNDGHTQSENNKNTQENKAKS--------
ID24  SSEAKDSAPLQKANIKNTNDGHTQSENNKNTQENKAKS--------
ID26  SSEAKDNAPLQKANIKNTNDGHTQSQNNKNTQENKAKS--------
ID25  SSEAKDNAPLQKANIKNTNDGHTQSQNNKNTQENKAKS--------
```

FIG. 2E

FIG. 3A

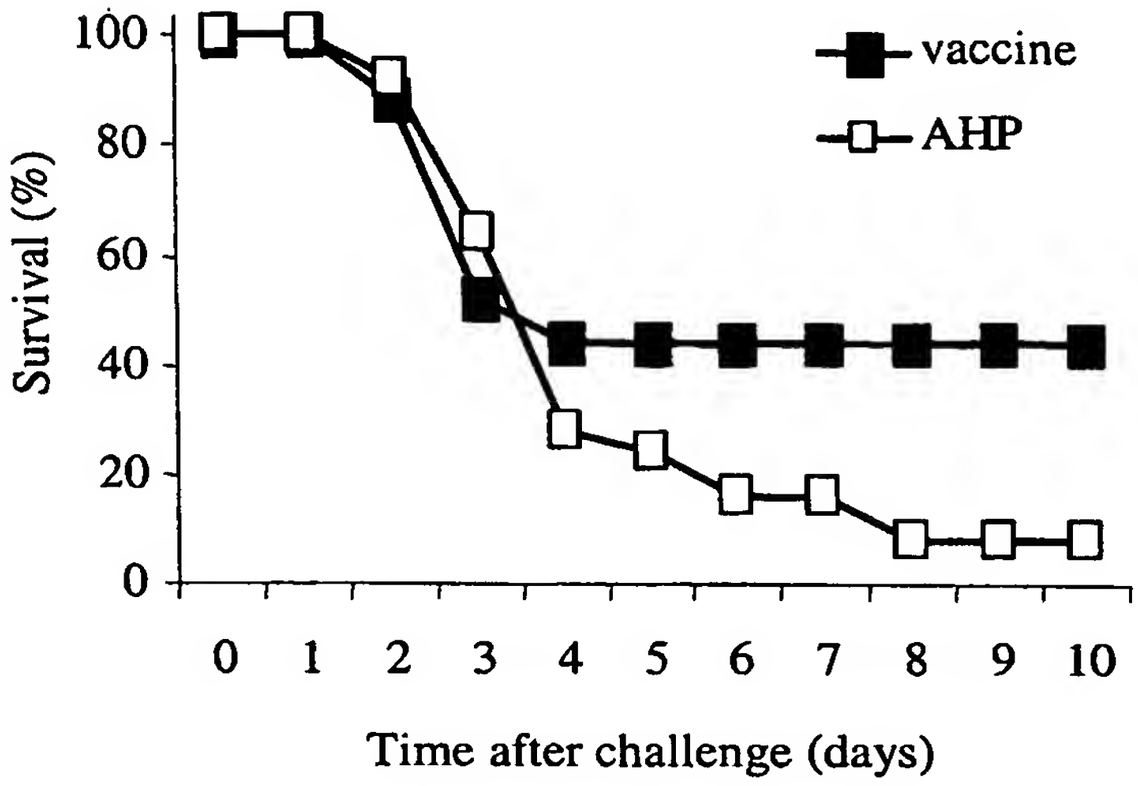


FIG. 3B

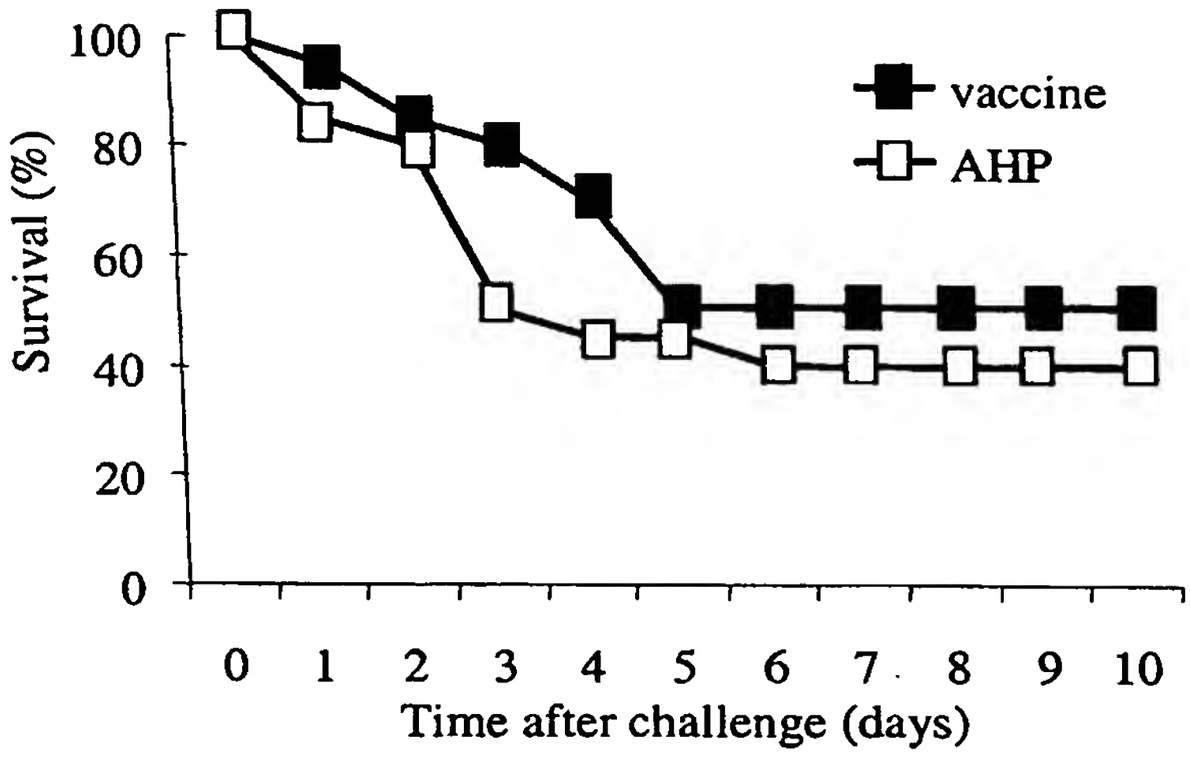


FIG. 3C

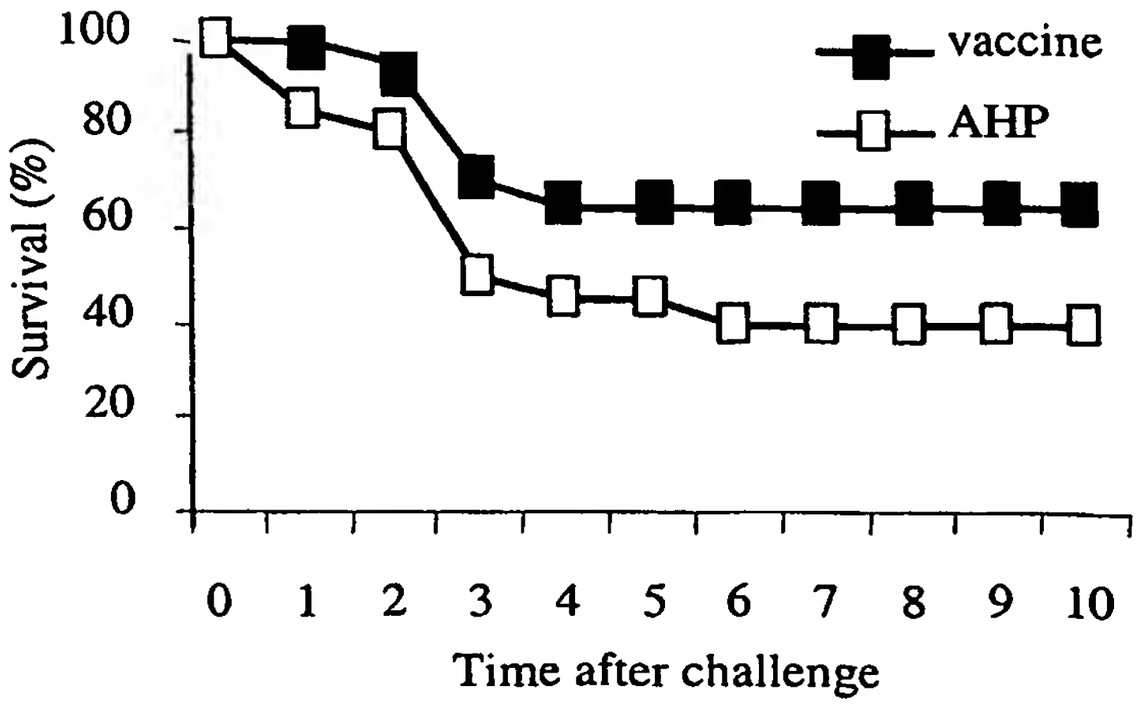


FIG. 4A

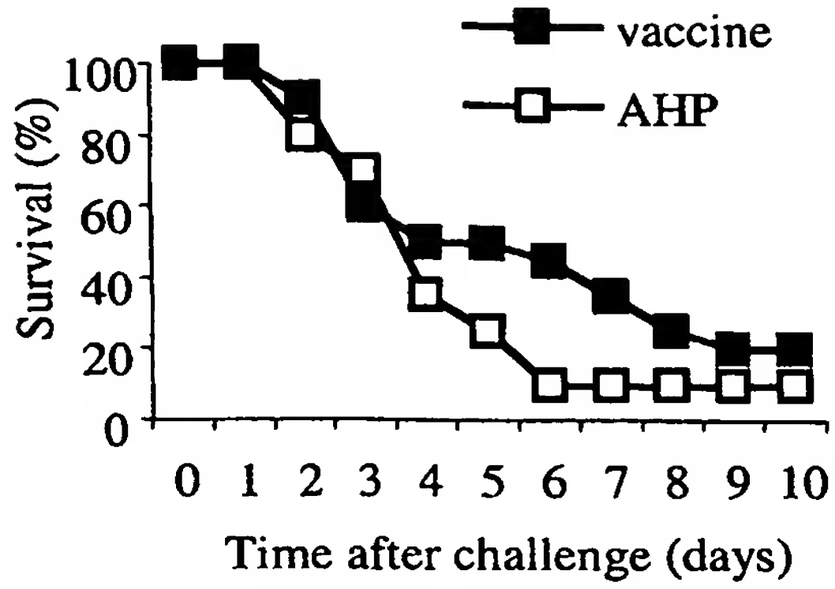


FIG. 4B

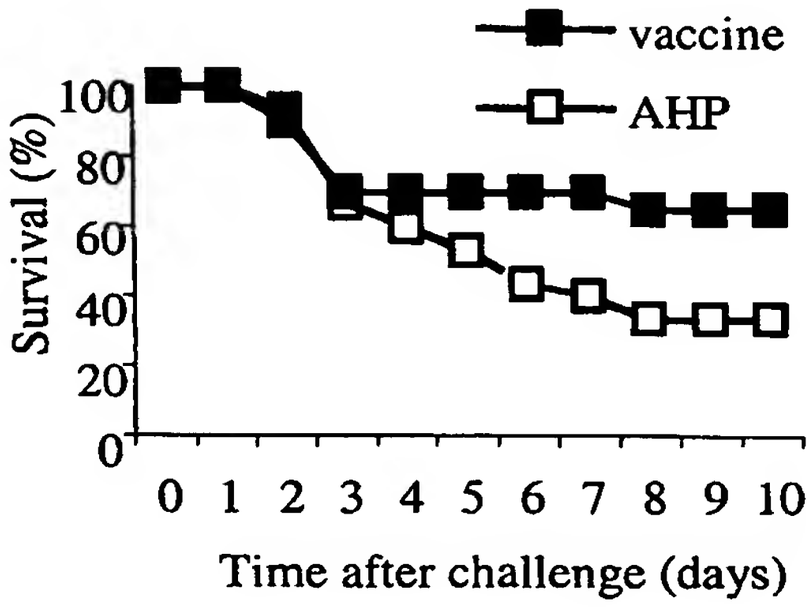


FIG. 4C

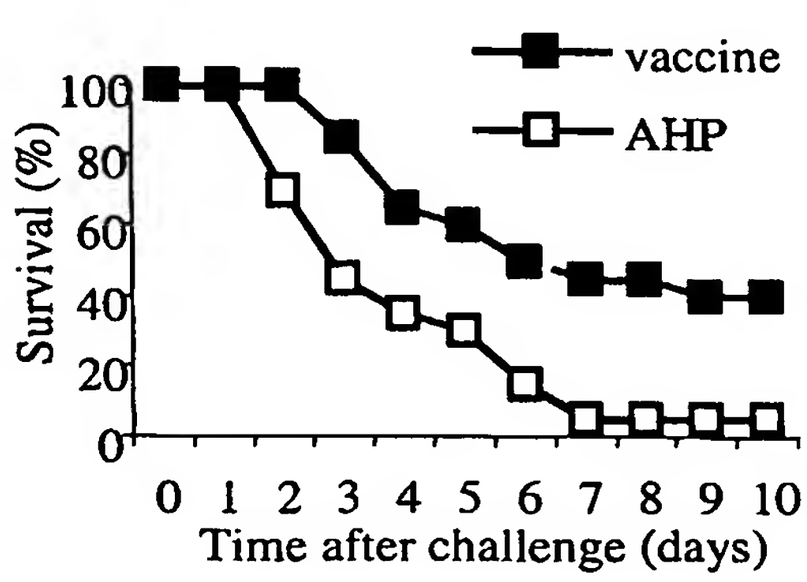


FIG. 4D

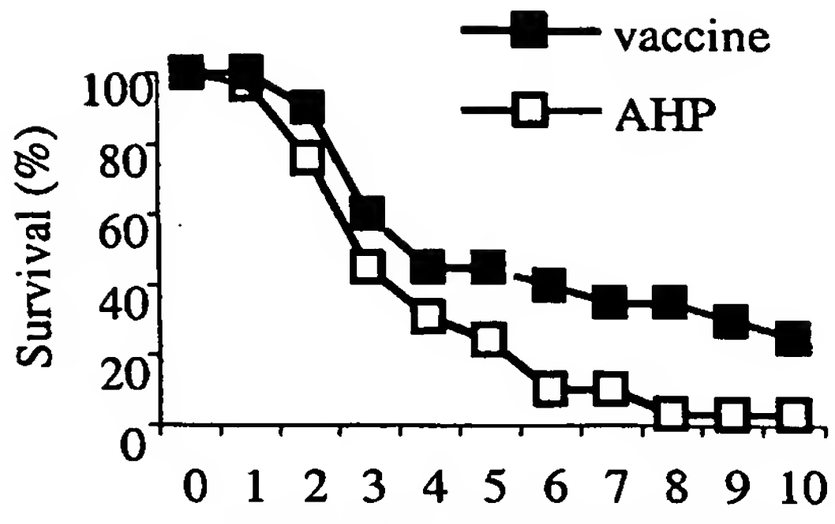


FIG. 4E

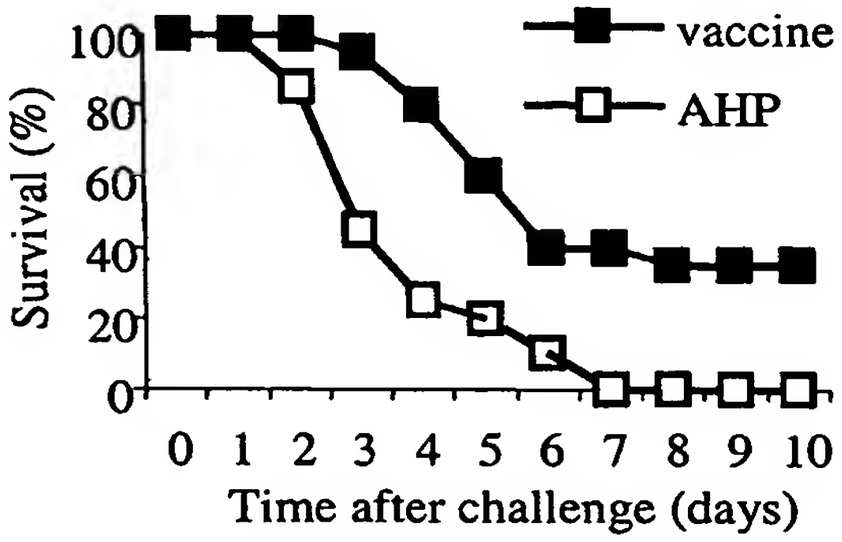


FIG. 4F

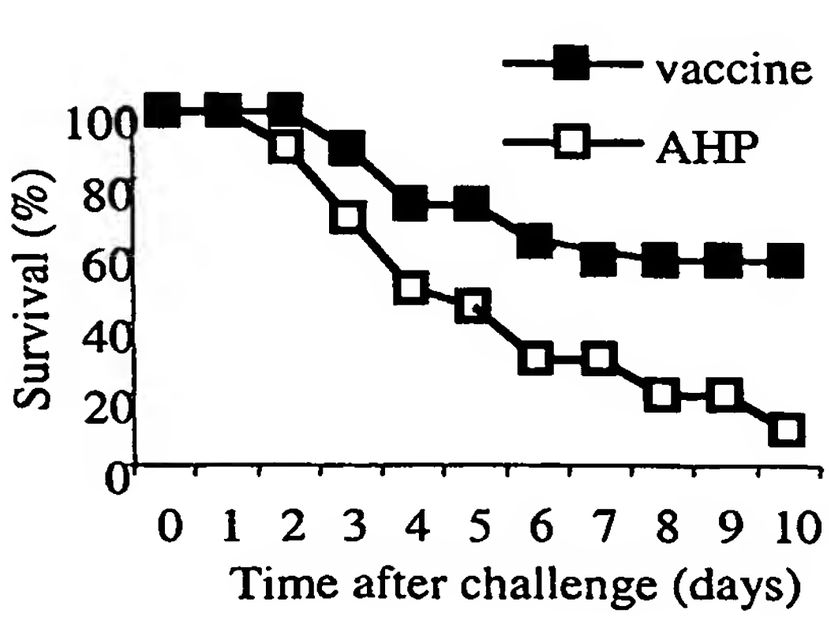


FIG. 4G

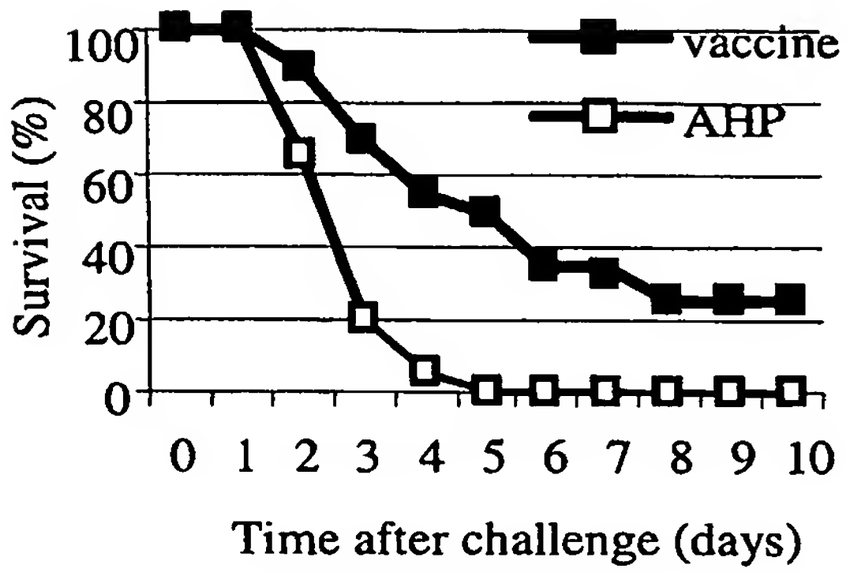
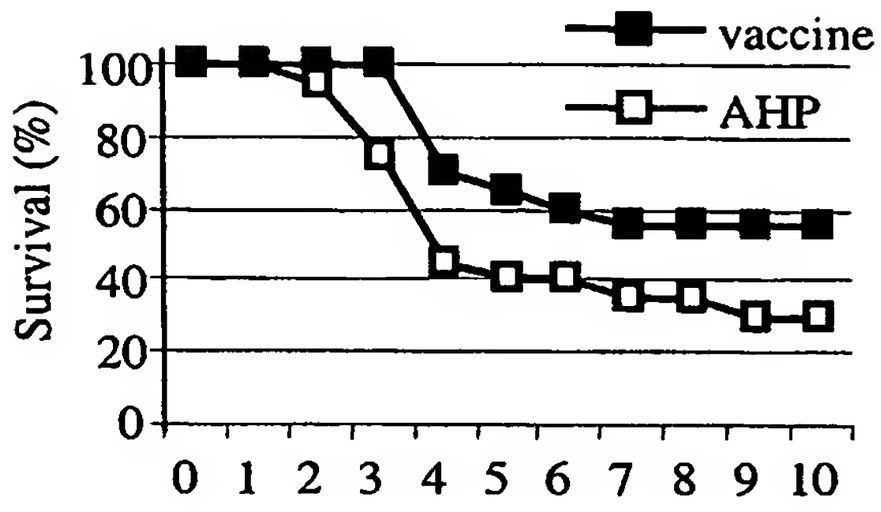

vaccine
AHP
Survival (%)
100
80
60
40
20
0
0 1 2 3 4 5 6 7 8 9 10
Time after challenge (days)

FIG. 4H


vaccine
AHP
Survival (%)
100
80
60
40
20
0
0 1 2 3 4 5 6 7 8 9 10
Time after challenge (days)

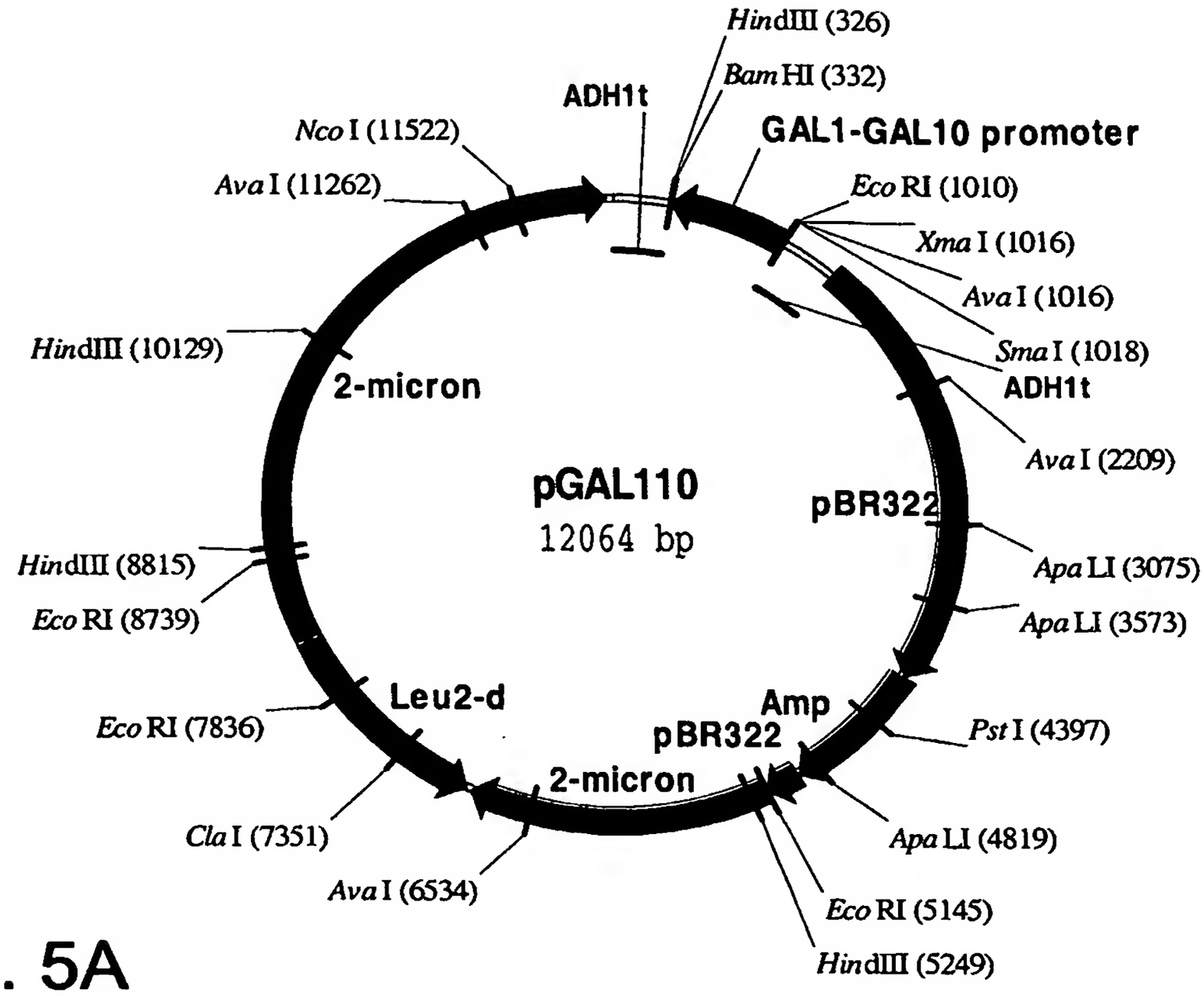

HindIII (326)
BamHI (332)
ADH1t
GAL1-GAL10 promoter
NcoI (11522)
AvaI (11262)
EcoRI (1010)
XmaI (1016)
AvaI (1016)
SmaI (1018)
HindIII (10129)
2-micron
ADH1t
AvaI (2209)
pGAL110
12064 bp
pBR322
ApaLI (3075)
HindIII (8815)
EcoRI (8739)
ApaLI (3573)
Leu2-d
Amp
EcoRI (7836)
pBR322
PstI (4397)
2-micron
ClaI (7351)
ApaLI (4819)
AvaI (6534)
EcoRI (5145)
HindIII (5249)

FIG. 5A

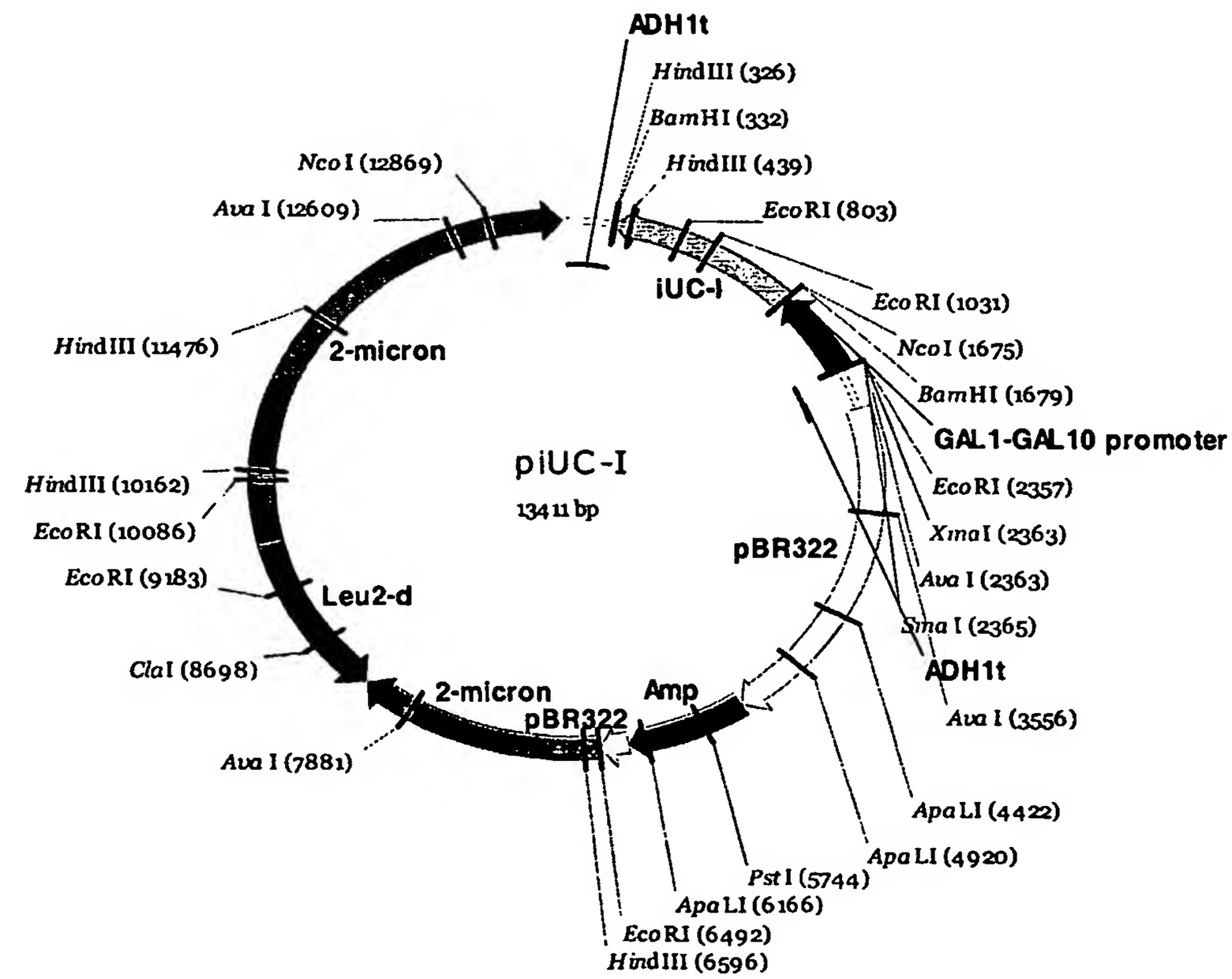

ADH1t
HindIII (326)
BamHI (332)
NcoI (12869)
HindIII (439)
AvaI (12609)
EcoRI (803)
iUC-I
EcoRI (1031)
HindIII (11476)
2-micron
NcoI (1675)
BamHI (1679)
GAL1-GAL10 promoter
piUC-I
13411 bp
EcoRI (2357)
HindIII (10162)
XmaI (2363)
EcoRI (10086)
pBR322
AvaI (2363)
EcoRI (9183)
Leu2-d
SmaI (2365)
ADH1t
ClaI (8698)
2-micron
Amp
AvaI (3556)
pBR322
AvaI (7881)
ApaLI (4422)
ApaLI (4920)
PstI (5744)
ApaLI (6166)
EcoRI (6492)
HindIII (6596)

FIG. 5B

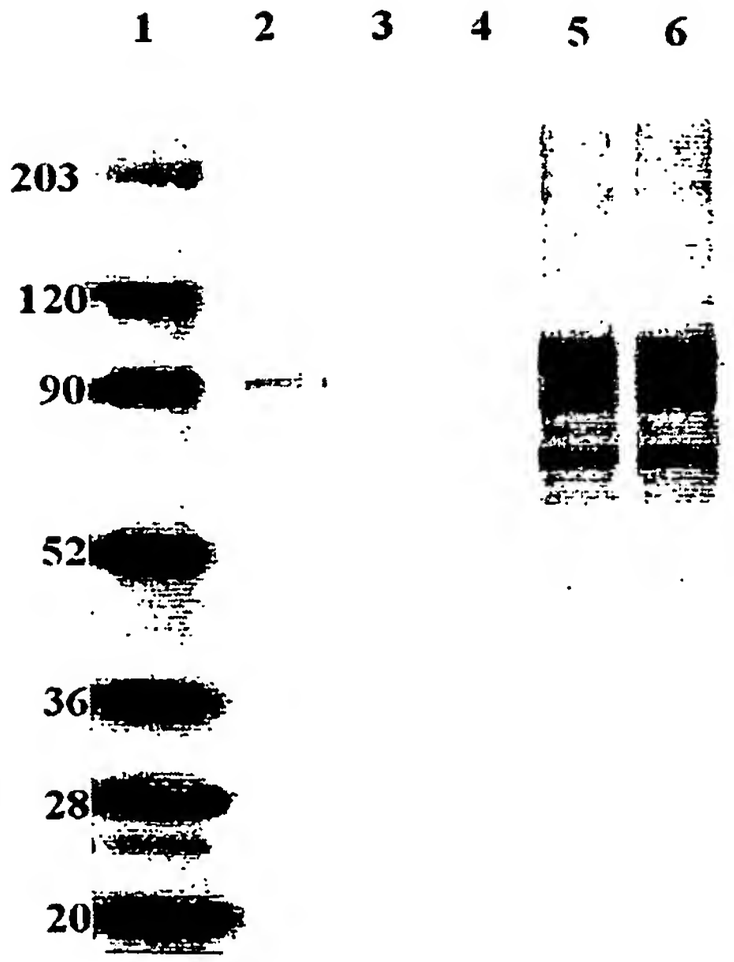


FIG. 6A

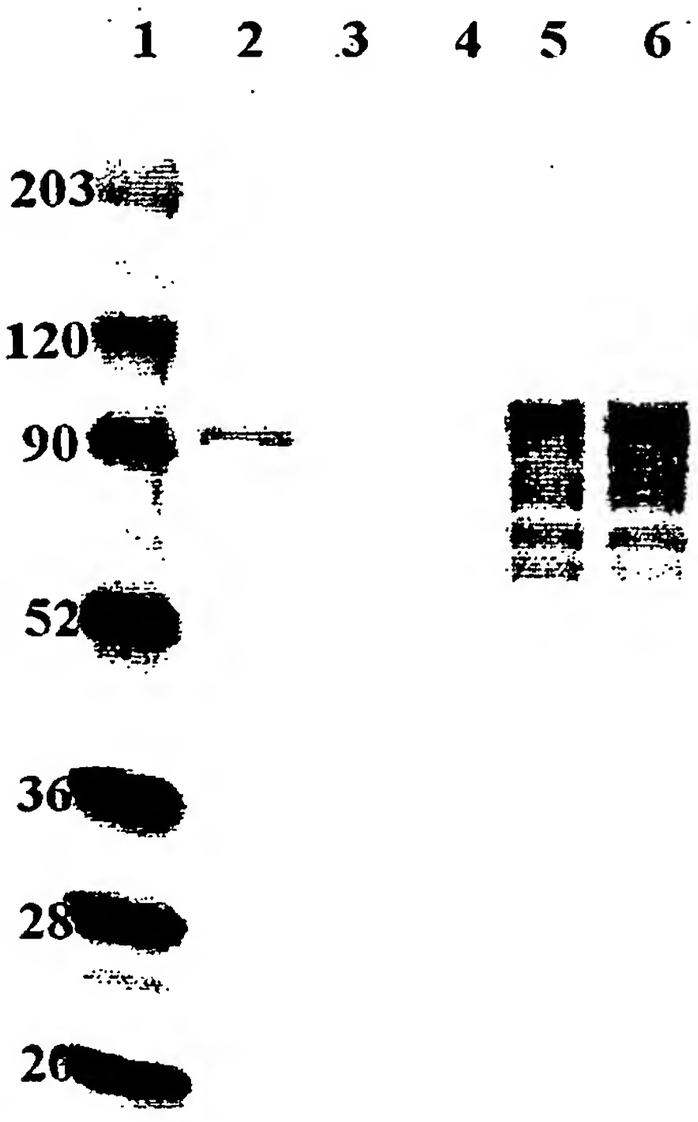


FIG. 6B

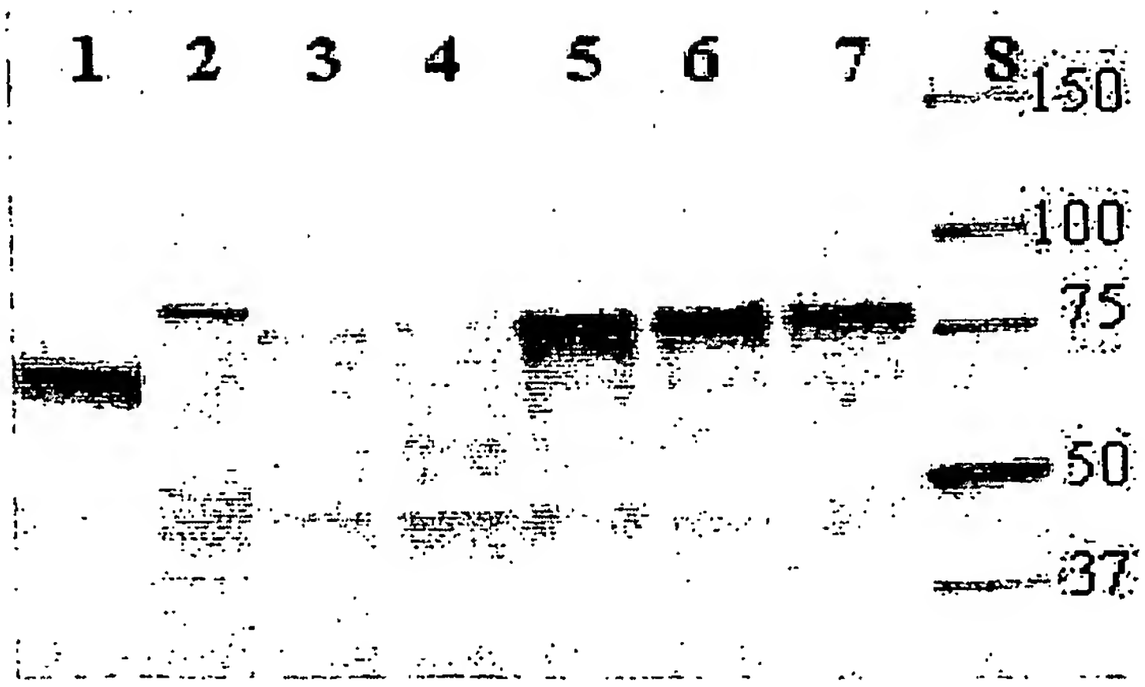


FIG. 7A

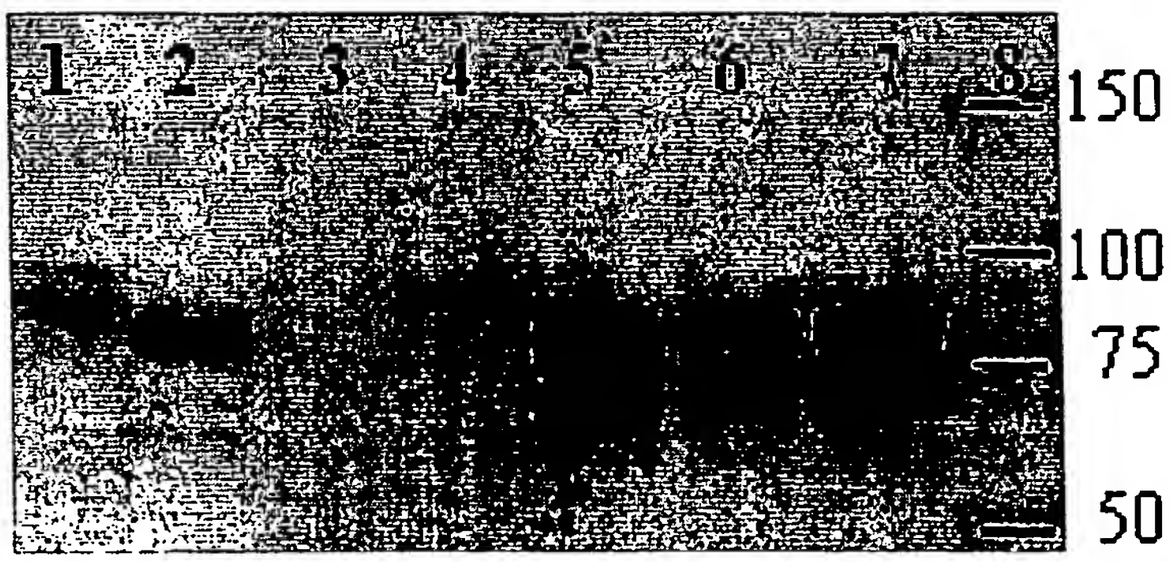


FIG. 7B

ATGAACAAACAGCAAAAAGAATTTAAATCATTTTATTCAATTAGAAAGTCATCACTAGGCGTTGCATCTGTAGCA
ATTAGTACACTTTTATTATTAATGTCAAATGGCGAAGCACAAGCAGCAGCTGAAGAAACAGGTGGTACAAATACA
GAAGCACAACCAAAAACTGAAGCAGTTGCAAGTCCAACAACAACATCTGAAAAAGCTCCAGAAACTAAACCAGTA
GCTAATGCTGTCTCAGTATCTAATAAAGAAGTTGAGGCCCCTACTTCTGAAACAAAAGAAGCTAAAGAAGTTAAA
GAAGTTAAAGCCCCTAAGGAAACAAAAGAAGTTAAACCAGCAGCAAAAGCCACTAACAATACATATCCTATTTTG
AATCAGGAACTTAGAGAAGCGATTAAAAACCCTGCAATAAAAGACAAAGATCATAGCGCACCAAACTCTCGTCCA
ATTGATTTTGAAATGAAAAAGAAAGATGGAACTCAACAGTTTTATCATTATGCAAGTTCTGTTAAACCTGCTAGA
GTTATTTTCACTGATTCAAAACCAGAAATTGAATTAGGATTACAATCAGGTCAATTTTGGAGAAAATTTGAAGTT
TATGAAGGTGACAAAAAGTTGCCAATTAAATTAGTATCATACGATACTGTTAAAGATTATGCTTACATTCGCTTC
TCTGTATCAAACGGAACAAAAGCTGTTAAAATTGTTAGTTCAACACACTTCAATAACAAAGAAGAAAAATACGAT
TACACATTAATGGAATTCGCACAACCAATTTATAACAGTGCAGATAAATTCAAAACTGAAGAAGATTATAAAGCT
GAAAAATTATTAGCGCCATATAAAAAAGCGAAAACACTAGAAAGACAAGTTTATGAATTAAATAAAATTCAAGAT
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AAATCAGCTATTACTGAATTCCAAAATGTACAACCAACAAATGAAAAAATGACTGATTTACAAGATACAAAATAT
GTTGTTTATGAAAGTGTTGAGAATAACGAATCTATGATGGATACTTTTGTTAAACACCCTATTAAAACAGGTATG
CTTAACGGCAAAAAATATATGGTCATGGAAACTACTAATGACGATTACTGGAAAGATTTCATGGTTGAAGGTCAA
CGTGTTAGAACTATAAGCAAAGATGCTAAAAATAATACTAGAACAATTATTTTCCCATATGTTGAAGGTAAAACT
CTATATGATGCTATCGTTAAAGTTCACGTAAAAACGATTGATTATGATGGACAATACCATGTCAGAATCGTTGAT
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GCTACTCCAGCTACGCCTAGCAAACCAACACCATCACCTGTTGAAAAAGAATCACAAAAACAAGACAGCCAAAAA
GATGACAATAAACAATTACCAAGTGTTGAAAAAGAAAATGACGCATCTAGTGAGTCAGGTAAAGACAAAACGCCT
GCTACAAAACCAACTAAAGGTGAAGTAGAATCAAGTAGTACAACTCCAACTAAGGTAGTATCTACGACTCAAAAT
GTTGCAAAACCAACAACTGCTTCATCAAAAACAACAAAAGATGTTGTTCAAACTTCAGCAGGTTCTAGCGAAGCA
AAAGATAGTGCTCCATTACAAAAAGCAAACATTAAAAACACAAATGATGGACACACTCAAAGCCAAAACAATAAA
AATACACAAGAAAATAAAGCAAAATCATTACCACAAACTGGTGAAGAATCAAATAAAGATATGACATTACCATTA
ATGGCATTATTAGCTTTAAGTAGCATCGTTGCATTCGTATTACCTAGAAAACGTAAAAACCTCGAGCACCACCAC
CACCACCACTGA

FIG. 8A

ATGGCTGAAGAAACAGGTGGTACAAATACAGAAGCACAACCAAAAACTGAAGCAGTTGCAAGTCCAACAACAACA
TCTGAAAAAGCTCCAGAAACTAAACCAGTAGCTAATGCTGTCTCAGTATCTAATAAAGAAGTTGAGGCCCCTACT
TCTGAAACAAAAGAAGCTAAAGAAGTTAAAGAAGTTAAAGCCCCTAAGGAAACAAAAGAAGTTAAACCAGCAGCA
AAAGCCACTAACAATACATATCCTATTTTGAATCAGGAACTTAGAGAAGCGATTAAAAACCCTGCAATAAAAGAC
AAAGATCATAGCGCACCAAACTCTCGTCCAATTGATTTTGAAATGAAAAAGAAAGATGGAACTCAACAGTTTTAT
CATTATGCAAGTTCTGTTAAACCTGCTAGAGTTATTTTCACTGATTCAAAACCAGAAATTGAATTAGGATTACAA
TCAGGTCAATTTTGGAGAAAATTTGAAGTTTATGAAGGTGACAAAAAGTTGCCAATTAAATTAGTATCATACGAT
ACTGTTAAAGATTATGCTTACATTCGCTTCTCTGTATCAAACGGAACAAAAGCTGTTAAAATTGTTAGTTCAACA
CACTTCAATAACAAAGAAGAAAAATACGATTACACATTAATGGAATTCGCACAACCAATTTATAACAGTGCAGAT
AAATTCAAAACTGAAGAAGATTATAAAGCTGAAAAATTATTAGCGCCATATAAAAAAGCGAAAACACTAGAAAGA
CAAGTTTATGAATTAAATAAAATTCAAGATAAACTTCCTGAAAAATTAAAGGCTGAGTACAAGAAGAAATTAGAG
GATACAAAGAAAGCTTTAGATGAGCAAGTGAAATCAGCTATTACTGAATTCCAAAATGTACAACCAACAAATGAA
AAAATGACTGATTTACAAGATACAAAATATGTTGTTTATGAAAGTGTTGAGAATAACGAATCTATGATGGATACT
TTTGTTAAACACCCTATTAAAACAGGTATGCTTAACGGCAAAAAATATATGGTCATGGAAACTACTAATGACGAT
TACTGGAAAGATTTCATGGTTGAAGGTCAACGTGTTAGAACTATAAGCAAAGATGCTAAAAATAATACTAGAACA
ATTATTTTCCCATATGTTGAAGGTAAAACTCTATATGATGCTATCGTTAAAGTTCACGTAAAAACGATTGATTAT
GATGGACAATACCATGTCAGAATCGTTGATAAAGAAGCATTTACAAAAGCCAATACCGATAAATCTAACAAAAAA
GAACAACAAGATAACTCAGCTAAGAAGGAAGCTACTCCAGCTACGCCTAGCAAACCAACACCATCACCTGTTGAA
AAAGAATCACAAAAACAAGACAGCCAAAAAGATGACAATAAACAATTACCAAGTGTTGAAAAAGAAAATGACGCA
TCTAGTGAGTCAGGTAAAGGCGTAACGCTTGCTACAAAACCAACTAAAGGTGAAGTAGAATCAAGTAGTACAACT
CCAACTAAGGTAGTATCTACGACTCAAAATGTTGCAAAACCAACAACTGGTTCATCAAAAACAACAAAAGATGTT
GTTCAAACTTCAGCAGGTTCTAGCGAAGCAAAAGATAGTGCTCCATTACAAAAAGCAAACATTAAACACACAAAT
GATGGACACACTCAAAGCCAAAACAATAAAAATACACAAGAAAATAAAGCAAAATCACTCGAGCACCACCACCAC
CACCACTGA

FIG. 8B

ATGGGTAACAAGCAACAAAAGGAATTCAAGTCTTTCTACTCCATTAGAAAGTCTTCCTTGGGTGTTGCTTCTGTC
GCTATCTCCACCTTGTTGTTGTTGATGTCTAACGGTGAAGCTCAAGCTGCTGCTGAAGAAACTGGTGGTACCAAC
ACTGAAGCTCAACCAAAGACCGAAGCTGTCGCTTCCCCAACCACTACCTCTGAAAAGGCTCCAGAAACTAAGCCA
GTTGCTAACGCTGTCTCCGTTTCTAACAAGGAAGTCGAAGCTCCAACCTCCGAAACTAAGGAAGCTAAGGAAGTT
AAGGAAGTCAAGGCTCCAAAGGAAACTAAGGAAGTCAAGCCAGCTGCTAAGGCTACCAACAACACTTACCCAATT
TTGAACCAAGAATTGAGAGAAGCTATTAAGAACCCAGCTATCAAGGACAAGGACCACTCCGCTCCAAACTCTAGA
CCAATCGACTTCGAAATGAAGAAGAAGGACGGTACCCAACAATTCTACCACTACGCGTCCTCTGTCAAGCCAGCT
AGAGTTATTTTCACCGACTCTAAGCCAGAAATCGAATTGGGTTTGCAATCCGGTCAATTCTGGAGAAAGTTCGAA
GTCTACGAAGGTGACAAGAAGTTGCCAATTAAGTTGGTTTCCTACGACACCGTCAAGGACTACGCTTACATCAGA
TTCTCCGTTTCTAACGGTACTAAGGCTGTCAAGATTGTCTCTTCCACCCACTTCAACAACAAGGAAGAAAAGTAC
GACTACACTTTGATGGAATTCGCTCAACCAATTTACAACTCTGCTGACAAGTTCAAGACCGAAGAAGACTACAAG
GCTGAAAAGTTGTTGGCTCCATACAAGAAGGCTAAGACTTTGGAAAGACAAGTTTACGAATTGAACAAGATCCAA
GACAAGTTGCCAGAAAAGTTGAAGGCTGAATACAAGAAGAAGTTGGAAGACACCAAGAAGGCTTTGGACGAACAA
GTCAAGTCCGCTATCACCGAATTCCAAAACGTTCAACCAACTAACGAAAAGATGACTGACTTGCAAGACACTAAG
TACGTCGTCTACGAATCCGTCGAAAACAACGAATCCATGATGGACACCTTCGTTAAGCACCCAATTAAGACTGGT
ATGTTGAACGGTAAGAAGTACATGGTCATGGAAACCACTAACGACGACTACTGGAAGGACTTCATGGTTGAAGGT
CAAAGAGTCAGAACCATCTCCAAGGACGCTAAGAACAACACTAGAACCATTATCTTCCCATACGTTGAAGGTAAG
ACTTTGTACGACGCTATCGTCAAGGTTCACGTCAAGACTATTGACTACGACGGTCAATACCACGTTAGAATTGTT
GACAAGGAAGCTTTCACCAAGGCTAACACCGACAAGTCCAACAAGAAGGAACAACAAGACAACTCTGCTAAGAAG
GAAGCTACCCCAGCTACCCCATCTAAGCCAACCCCATCTCCAGTTGAAAAGGACGACAACAAGCAATTGCCATCC
GTCGAAAACAACGAATCCATGATGGACACCTTCGTTAAGCACCCAATTAAGACTGGTATGTTGAACGGTAAGAAG
TACATGGTCATGGAAACCACTAACGACGACTACTGGAAGGACTTCATGGTTGAAGGTCAAAGAGTCAGAACCATC
TCCAAGGACGCTAAGAACAACACTAGAACCATTATCTTCCCATACGTTGAAGGTAAGACTTTGTACGACGCTATC
GTCAAGGTTCACGTCAAGACTATTGACTACGACGGTCAATACCACGTTAGAATTGTTGACAAGGAAGCTTTCACC
AAGGCTAACACCGACAAGTCCAACAAGAAGGAACAACAAGACAACTCTGCTAAGAAGGAAGCTACCCCAGCTACC
CCATCTAAGCCAACCCCATCTCCAGTTGAAAAGGACGACAACAAGCAATTGCCATCCGTCGAAAAGGAAAACGAC
GCGTCTTCTGAATCCGGTAAGGACAAGACTCCAGCTACCAAGCCAACTAAGGGTGAAGTTGAATCTTCCTCTACT
ACTCCAACCAAGGTTGTCTCCACTACCCAAAACGTCGCTAAGCCAACTACCGCTTCTTCCAAGACTACCAAGGAC
GTTGTCCAAACTTCTGCTGGTTCCTCTGAAGCTAAGGACTCTGCTCCATTGCAAAAGGCTAACATCAAGAACACC
AACGACGGTCACACCCAATCCCAAAACAACAAGAACACTCAAGAAAACAAGGCTAAGTCTTGCCACAAACCGGTG
AAGAATCCAACAAGGACATGACCTTGCCATTGATGGCTTTGTTGGCTTTGTCTTCCATCGTTGCTTTCGTCTTG
CCAAGAAAGAGAAAGAACTAA

FIG. 8C

ATGGCTGAAGAAACTGGTGGTACCAACACTGAAGCTCAACCAAAGACCGAAGCTGTCGCTTCCCCAACCACTACC
TCTGAAAAGGCTCCAGAAACTAAGCCAGTTGCTAACGCTGTCTCCGTTTCTAACAAGGAAGTCGAAGCTCCAACC
TCCGAAACTAAGGAAGCTAAGGAAGTTAAGGAAGTCAAGGCTCCAAAGGAAACTAAGGAAGTCAAGCCAGCTGCT
AAGGCTACCAACAACACTTACCCAATTTTGAACCAAGAATTGAGAGAAGCTATTAAGAACCCAGCTATCAAGGAC
AAGGACCACTCCGCTCCAAACTCTAGACCAATCGACTTCGAAATGAAGAAGAAGGACGGTACCCAACAATTCTAC
CACTACGCGTCCTCTGTCAAGCCAGCTAGAGTTATTTTCACCGACTCTAAGCCAGAAATCGAATTGGGTTTGCAA
TCCGGTCAATTCTGGAGAAAGTTCGAAGTCTACGAAGGTGACAAGAAGTTGCCAATTAAGTTGGTTTCCTACGAC
ACCGTCAAGGACTACGCTTACATCAGATTCTCCGTTTCTAACGGTACTAAGGCTGTCAAGATTGTCTCTTCCACC
CACTTCAACAACAAGGAAGAAAAGTACGACTACACTTTGATGGAATTCGCTCAACCAATTTACAACTCTGCTGAC
AAGTTCAAGACCGAAGAAGACTACAAGGCTGAAAAGTTGTTGGCTCCATACAAGAAGGCTAAGACTTTGGAAAGA
CAAGTTTACGAATTGAACAAGATCCAAGACAAGTTGCCAGAAAAGTTGAAGGCTGAATACAAGAAGAAGTTGGAA
GACACCAAGAAGGCTTTGGACGAACAAGTCAAGTCCGCTATCACCGAATTCCAAAACGTTCAACCAACTAACGAA
AAGATGACTGACTTGCAAGACACTAAGTACGTCGTCTACGAATCCGTCGAAAACAACGAATCCATGATGGACACC
TTCGTTAAGCACCCAATTAAGACTGGTATGTTGAACGGTAAGAAGTACATGGTCATGGAAACCACTAACGACGAC
TACTGGAAGGACTTCATGGTTGAAGGTCAAAGAGTCAGAACCATCTCCAAGGACGCTAAGAACAACACTAGAACC
ATTATCTTCCCATACGTTGAAGGTAAGACTTTGTACGACGCTATCGTCAAGGTTCACGTCAAGACTATTGACTAC
GACGGTCAATACCACGTTAGAATTGTTGACAAGGAAGCTTTCACCAAGGCTAACACCGACAAGTCCAACAAGAAG
GAACAACAAGACAACTCTGCTAAGAAGGAAGCTACCCCAGCTACCCCATCTAAGCCAACCCCATCTCCAGTTGAA
AAGGAATCTCAAAAGCAAGACTCCCAAAAGGACGACAACAAGCAATTGCCATCCGTCGAAAAGGAAAACGACGCG
TCTTCTGAATCCGGTAAGGACAAGACTCCAGCTACCAAGCCAACTAAGGGTGAAGTTGAATCTTCCTCTACTACT
CCAACCAAGGTTGTCTCCACTACCCAAAACGTCGCTAAGCCAACTACCGCTTCTTCCAAGACTACCAAGGACGTT
GTCCAAACTTCTGCTGGTTCCTCTGAAGCTAAGGACTCTGCTCCATTGCAAAAGGCTAACATCAAGAACACCAAC
GACGGTCACACCCAATCCCAAAACAACAAGAACACTCAAGAAAACAAGGCTAAGTCTTAA

FIG. 8D

ATGGCTGAAGAAACTGGTGGTACCAACACTGAAGCTCAACCAAAGACCGAAGCTGTCGCTTCCCCAACCACTACC
TCTGAAAAGGCTCCAGAAACTAAGCCAGTTGCTAACGCTGTCTCCGTTTCTAACAAGGAAGTCGAAGCTCCAACC
TCCGAAACTAAGGAAGCTAAGGAAGTTAAGGAAGTCAAGGCTCCAAAGGAAACTAAGGAAGTCAAGCCAGCTGCT
AAGGCTACCAACAACACTTACCCAATTTTGAACCAAGAATTGAGAGAAGCTATTAAGAACCCAGCTATCAAGGAC
AAGGACCACTCCGCTCCAAACTCTAGACCAATCGACTTCGAAATGAAGAAGAAGGACGGTACCCAACAATTCTAC
CACTACGCGTCCTCTGTCAAGCCAGCTAGAGTTATTTTCACCGACTCTAAGCCAGAAATCGAATTGGGTTTGCAA
TCCGGTCAATTCTGGAGAAAGTTCGAAGTCTACGAAGGTGACAAGAAGTTGCCAATTAAGTTGGTTTCCTACGAC
ACCGTCAAGGACTACGCTTACATCAGATTCTCCGTTTCTAACGGTACTAAGGCTGTCAAGATTGTCTCTTCCACC
CACTTCAACAACAAGGAAGAAAAGTACGACTACACTTTGATGGAATTCGCTCAACCAATTTACAACTCTGCTGAC
AAGTTCAAGACCGAAGAAGACTACAAGGCTGAAAAGTTGTTGGCTCCATACAAGAAGGCTAAGACTTTGGAAAGA
CAAGTTTACGAATTGAACAAGATCCAAGACAAGTTGCCAGAAAAGTTGAAGGCTGAATACAAGAAGAAGTTGGAA
GACACCAAGAAGGCTTTGGACGAACAAGTCAAGTCCGCTATCACCGAATTCCAAAACGTTCAACCAACTAACGAA
AAGATGACTGACTTGCAAGACACTAAGTACGTCGTCTACGAATCCGTCGAAAACAACGAATCCATGATGGACACC
TTCGTTAAGCACCCAATTAAGACTGGTATGTTGAACGGTAAGAAGTACATGGTCATGGAAACCACTAACGACGAC
TACTGGAAGGACTTCATGGTTGAAGGTCAAAGAGTCAGAACCATCTCCAAGGACGCTAAGAACAACACTAGAACC
ATTATCTTCCCATACGTTGAAGGTAAGACTTTGTACGACGCTATCGTCAAGGTTCACGTCAAGACTATTGACTAC
GACGGTCAATACCACGTTAGAATTGTTGACAAGGAAGCTTTCACCAAGGCTAACACCGACAAGTCCAACAAGAAG
GAACAACAAGACAACTCTGCTAAGAAGGAAGCTACCCCAGCTACCCCATCTAAGCCAACCCCATAA

FIG. 8E

ATGGCTGAAGAAACTGGTGGTACCAACACTGAAGCTCAACCAAAGACCGAAGCTGTCGCTTCCCCAACCACTACC
TCTGAAAAGGCTCCAGAAACTAAGCCAGTTGCTAACGCTGTCTCCGTTTCTAACAAGGAAGTCGAAGCTCCAACC
TCCGAAACTAAGGAAGCTAAGGAAGTTAAGGAAGTCAAGGCTCCAAAGGAAACTAAGGAAGTCAAGCCAGCTGCT
AAGGCTACCAACAACACTTACCCAATTTTGAACCAAGAATTGAGAGAAGCTATTAAGAACCCAGCTATCAAGGAC
AAGGACCACTCCGCTCCAAACTCTAGACCAATCGACTTCGAAATGAAGAAGAAGGACGGTACCCAACAATTCTAC
CACTACGCGTCCTCTGTCAAGCCAGCTAGAGTTATTTTCACCGACTCTAAGCCAGAAATCGAATTGGGTTTGCAA
TCCGGTCAATTCTGGAGAAAGTTCGAAGTCTACGAAGGTGACAAGAAGTTGCCAATTAAGTTGGTTTCCTACGAC
ACCGTCAAGGACTACGCTTACATCAGATTCTCCGTTTCTAACGGTACTAAGGCTGTCAAGATTGTCTCTTCCACC
CACTTCAACAACAAGGAAGAAAAGTACGACTACACTTTGATGGAATTCGCTCAACCAATTTACAACTCTGCTGAC
AAGTTCAAGACCGAAGAAGACTACAAGGCTGAAAAGTTGTTGGCTCCATACAAGAAGGCTAAGACTTTGGAAAGA
CAAGTTTACGAATTGAACAAGATCCAAGACAAGTTGCCAGAAAAGTTGAAGGCTGAATACAAGAAGAAGTTGGAA
GACACCAAGAAGGCTTTGGACGAACAAGTCAAGTCCGCTATCACCGAATTCCAAAACGTTCAACCAACTAACGAA
AAGATGACTGACTTGCAAGACACTAAGTACGTCGTCTACGAATCCGTCGAAAACAACGAATCCATGATGGACACC
TTCGTTAAGCACCCAATTAAGACTGGTATGTTGAACGGTAAGAAGTACATGGTCATGGAAACCACTAACGACGAC
TACTGGAAGGACTTCATGGTTGAAGGTCAAAGAGTCAGAACCATCTCCAAGGACGCTAAGAACAACACTAGAACC
ATTATCTTCCCATACGTTGAAGGTAAGACTTTGTACGACGCTATCGTCAAGGTTCACGTCAAGACTATTGACTAC
GACGGTCAATACCACGTTAGAATTGTTGACAAGGAAGCTTTCACCAAGGCTAACACCGACAAGTCCAACAAGAAG
GAACAACAAGACAACTCTGCTAAGAAGGAAGCTACCCCAGCTACCCCATCTAAGCCAACCCCATCTCCAGTTGAA
AAGGAATCTCAAAAGCAAGACTCCCAAAAGGACGACAACAAGCAATTGCCATCCGTCGAAAAGGAAAACGACGCG
TCTTCTGAATCCGGTAAGGGTGTCACTTTGGCTACCAAGCCAACTAAGGGTGAAGTTGAATCTTCCTCTACTACT
CCAACCAAGGTTGTCTCCACTACCCAAAACGTCGCTAAGCCAACTACCGGTTCTTCCAAGACTACCAAGGACGTT
GTCCAAACTTCTGCTGGTTCCTCTGAAGCTAAGGACTCTGCTCCATTGCAAAAGGCTAACATCAAGCACACCAAC
GACGGTCACACCCAATCCCAAAACAACAAGAACACTCAAGAAAACAAGGCTAAGTCTTAA

FIG. 8F

ATGGCTGAAGAAACTGGTGGTACCAACACTGAAGCTCAACCAAAGACCGAAGCTGTCGCTTCCCCAACCACTACC
TCTGAAAAGGCTCCAGAAACTAAGCCAGTTGCTAACGCTGTCTCCGTTTCTAACAAGGAAGTCGAAGCTCCAACC
TCCGAAACTAAGGAAGCTAAGGAAGTTAAGGAAGTCAAGGCTCCAAAGGAAACTAAGGAAGTCAAGCCAGCTGCT
AAGGCTACCAACAACACTTACCCAATTTTGAACCAAGAATTGAGAGAAGCTATTAAGAACCCAGCTATCAAGGAC
AAGGACCACTCCGCTCCAAACTCTAGACCAATCGACTTCGAAATGAAGAAGAAGGACGGTACCCAACAATTCTAC
CACTACGCGTCCTCTGTCAAGCCAGCTAGAGTTATTTTCACCGACTCTAAGCCAGAAATCGAATTGGGTTTGCAA
TCCGGTCAATTCTGGAGAAAGTTCGAAGTCTACGAAGGTGACAAGAAGTTGCCAATTAAGTTGGTTTCCTACGAC
ACCGTCAAGGACTACGCTTACATCAGATTCTCCGTTTCTAACGGTACTAAGGCTGTCAAGATTGTCTCTTCCACC
CACTTCAACAACAAGGAAGAAAAGTACGACTACACTTTGATGGAATTCGCTCAACCAATTTACAACTCTGCTGAC
AAGTTCAAGACCGAAGAAGACTACAAGGCTGAAAAGTTGTTGGCTCCATACAAGAAGGCTAAGACTTTGGAAAGA
CAAGTTTACGAATTGAACAAGATCCAAGACAAGTTGCCAGAAAAGTTGAAGGCTGAATACAAGAAGAAGTTGGAA
GACACCAAGAAGGCTTTGGACGAACAAGTCAAGTCCGCTATCACCGAATTCCAAAACGTTCAACCAACTAACGAA
AAGATGACTGACTTGCAAGACACTAAGTACGTCGTCTACGAATCCGTCGAAAACAACGAATCCATGATGGACACC
TTCGTTAAGCACCCAATTAAGACTGGTATGTTGAACGGTAAGAAGTACATGGTCATGGAAACCACTAACGACGAC
TACTGGAAGGACTTCATGGTTGAAGGTCAAAGAGTCAGAACCATCTCCAAGGACGCTAAGAACAACACTAGAACC
ATTATCTTCCCATACGTTGAAGGTAAGACTTTGTACGACGCTATCGTCAAGGTTCACGTCAAGACTATTGACTAC
GACGGTCAATACCACGTTAGAATTGTTGACAAGGAAGCTTTCACCAAGGCTAACACCGACAAGTCCAACAAGAAG
GAACAACAAGACAACTCTGCTAAGAAGGAAGCTACCCCAGCTACCCCATCTAAGCCAACCCCATCTCCAGTTGAA
AAGGAATCTCAAAAGCAAGACTCCCAAAAGGACGACAACAAGCAATTGCCATCCGTCGAAAAGGAAAACGACGCG
TCTTCTGAATCCGGTAAGGGCGTCACTTTGGCTACCAAGCCAACTAAGGGTGAAGTTGAATCTTCCTCTACTACT
CCAACCAAGGTTGTCTCCACTACCCAAAACGTCGCTAAGCCAACTACCGGTTCTTCCAAGACTACCAAGGACGTT
GTCCAAACTTCTGCTGGTTCCTCTGAAGCTAAGGACTCTGCTCCATTGCAAAAGGCTAACATCAAGCACACCAAC
GACGGTCACACCCAATCCCAAAACAACAAGAACACTCAAGAAAACAAGGCTAAGTCTTAA

FIG. 8G

ATGGCTGAAGAAACTGGTGGTACCAACACTGAAGCTCAACCAAAGACCGAAGCTGTCGCTTCCCCAACCACTACC
TCTGAAAAGGCTCCAGAAACTAAGCCAGTTGCTAACGCTGTCTCCGTTTCTAACAAGGAAGTCGAAGCTCCAACC
TCCGAAACTAAGGAAGCTAAGGAAGTTAAGGAAGTCAAGGCTCCAAAGGAAACTAAGGAAGTCAAGCCAGCTGCT
AAGGCTACCAACAACACTTACCCAATTTTGAACCAAGAATTGAGAGAAGCTATTAAGAACCCAGCTATCAAGGAC
AAGGACCACTCCGCTCCAAACTCTAGACCAATCGACTTCGAAATGAAGAAGAAGGACGGTACCCAACAATTCTAC
CACTACGCGTCCTCTGTCAAGCCAGCTAGAGTTATTTTCACCGACTCTAAGCCAGAAATCGAATTGGGTTTGCAA
TCCGGTCAATTCTGGAGAAAGTTCGAAGTCTACGAAGGTGACAAGAAGTTGCCAATTAAGTTGGTTTCCTACGAC
ACCGTCAAGGACTACGCTTACATCAGATTCTCCGTTTCTAACGGTACTAAGGCTGTCAAGATTGTCTCTTCCACC
CACTTCAACAACAAGGAAGAAAAGTACGACTACACTTTGATGGAATTCGCTCAACCAATTTACAACTCTGCTGAC
AAGTTCAAGACCGAAGAAGACTACAAGGCTGAAAAGTTGTTGGCTCCATACAAGAAGGCTAAGACTTTGGAAAGA
CAAGTTTACGAATTGAACAAGATCCAAGACAAGTTGCCAGAAAAGTTGAAGGCTGAATACAAGAAGAAGTTGGAA
GACACCAAGAAGGCTTTGGACGAACAAGTCAAGTCCGCTATCACCGAATTCCAAAACGTTCAACCAACTAACGAA
AAGATGACTGACTTGCAAGACACTAAGTACGTCGTCTACGAATCCGTCGAAAACAACGAATCCATGATGGACACC
TTCGTTAAGCACCCAATTAAGACTGGTATGTTGAACGGTAAGAAGTACATGGTCATGGAAACCACTAACGACGAC
TACTGGAAGGACTTCATGGTTGAAGGTCAAAGAGTCAGAACCATCTCCAAGGACGCTAAGAACAACACTAGAACC
ATTATCTTCCCATACGTTGAAGGTAAGACTTTGTACGACGCTATCGTCAAGGTTCACGTCAAGACTATTGACTAC
GACGGTCAATACCACGTTAGAATTGTTGACAAGGAAGCTTTCACCAAGGCTAACACCGACAAGTCCAACAAGAAG
GAACAACAAGACAACTCTGCTAAGAAGGAAGCTACCCCAGCTACCCCATCTAAGCCAACCCCATCTCCAGTTGAA
AAGGAATCTCAAAAGCAAGACTCCCAAAAGGACGACAACAAGCAATTGCCATCCGTCGAAAAGGAAAACGACGCG
TCTTCTGAATCCGGTAAGGGTGTTACTTTGGCTACCAAGCCAACTAAGGGTGAAGTTGAATCTTCCTCTACTACT
CCAACCAAGGTTGTCTCCACTACCCAAAACGTCGCTAAGCCAACTACCGGTTCTTCCAAGACTACCAAGGACGTT
GTCCAAACTTCTGCTGGTTCCTCTGAAGCTAAGGACTCTGCTCCATTGCAAAAGGCTAACATCAAGCACACCAAC
GACGGTCACACCCAATCCCAAAACAACAAGAACACTCAAGAAAACAAGGCTAAGTCTTAA

FIG. 8H

ATGGCTGAAGAAACTGGTGGTACCAACACTGAAGCTCAACCAAAGACCGAAGCTGTCGCTTCCCCAACCACTACC
TCTGAAAAGGCTCCAGAAACTAAGCCAGTTGCTAACGCTGTCTCCGTTTCTAACAAGGAAGTCGAAGCTCCAACC
TCCGAAACTAAGGAAGCTAAGGAAGTTAAGGAAGTCAAGGCTCCAAAGGAAACTAAGGAAGTCAAGCCAGCTGCT
AAGGCTACCAACAACACTTACCCAATTTTGAACCAAGAATTGAGAGAAGCTATTAAGAACCCAGCTATCAAGGAC
AAGGACCACTCCGCTCCAAACTCTAGACCAATCGACTTCGAAATGAAGAAGAAGGACGGTACCCAACAATTCTAC
CACTACGCGTCCTCTGTCAAGCCAGCTAGAGTTATTTTCACCGACTCTAAGCCAGAAATCGAATTGGGTTTGCAA
TCCGGTCAATTCTGGAGAAAGTTCGAAGTCTACGAAGGTGACAAGAAGTTGCCAATTAAGTTGGTTTCCTACGAC
ACCGTCAAGGACTACGCTTACATCAGATTCTCCGTTTCTAACGGTACTAAGGCTGTCAAGATTGTCTCTTCCACC
CACTTCAACAACAAGGAAGAAAAGTACGACTACACTTTGATGGAATTCGCTCAACCAATTTACAACTCTGCTGAC
AAGTTCAAGACCGAAGAAGACTACAAGGCTGAAAAGTTGTTGGCTCCATACAAGAAGGCTAAGACTTTGGAAAGA
CAAGTTTACGAATTGAACAAGATCCAAGACAAGTTGCCAGAAAAGTTGAAGGCTGAATACAAGAAGAAGTTGGAA
GACACCAAGAAGGCTTTGGACGAACAAGTCAAGTCCGCTATCACCGAATTCCAAAACGTTCAACCAACTAACGAA
AAGATGACTGACTTGCAAGACACTAAGTACGTCGTCTACGAATCCGTCGAAAACAACGAATCCATGATGGACACC
TTCGTTAAGCACCCAATTAAGACTGGTATGTTGAACGGTAAGAAGTACATGGTCATGGAAACCACTAACGACGAC
TACTGGAAGGACTTCATGGTTGAAGGTCAAAGAGTCAGAACCATCTCCAAGGACGCTAAGAACAACACTAGAACC
ATTATCTTCCCATACGTTGAAGGTAAGACTTTGTACGACGCTATCGTCAAGGTTCACGTCAAGACTATTGACTAC
GACGGTCAATACCACGTTAGAATTGTTGACAAGGAAGCTTTCACCAAGGCTAACACCGACAAGTCCAACAAGAAG
GAACAACAAGACAACTCTGCTAAGAAGGAAGCTACCCCAGCTACCCCATCTAAGCCAACCCCATCTCCAGTTGAA
AAGGAATCTCAAAAGCAAGACTCCCAAAAGGACGACAACAAGCAATTGCCATCCGTCGAAAAGGAAAACGACGCG
TCTTCTGAATCCGGTAAGGGCGTTACTTTGGCTACCAAGCCAACTAAGGGTGAAGTTGAATCTTCCTCTACTACT
CCAACCAAGGTTGTCTCCACTACCCAAAACGTCGCTAAGCCAACTACCGGTTCTTCCAAGACTACCAAGGACGTT
GTCCAAACTTCTGCTGGTTCCTCTGAAGCTAAGGACTCTGCTCCATTGCAAAAGGCTAACATCAAGCACACCAAC
GACGGTCACACCCAATCCCAAAACAACAAGAACACTCAAGAAAACAAGGCTAAGTCTTAA

FIG. 8I

ATGGCTGAAGAAACTGGTGGTACCAACACTGAAGCTCAACCAAAGACCGAAGCTGTCGCTTCCCCAACCACTACC
TCTGAAAAGGCTCCAGAAACTAAGCCAGTTGCTAACGCTGTCTCCGTTTCTAACAAGGAAGTCGAAGCTCCAACC
TCCGAAACTAAGGAAGCTAAGGAAGTTAAGGAAGTCAAGGCTCCAAAGGAAACTAAGGAAGTCAAGCCAGCTGCT
AAGGCTACCAACAACACTTACCCAATTTTGAACCAAGAATTGAGAGAAGCTATTAAGAACCCAGCTATCAAGGAC
AAGGACCACTCCGCTCCAAACTCTAGACCAATCGACTTCGAAATGAAGAAGAAGGACGGTACCCAACAATTCTAC
CACTACGCGTCCTCTGTCAAGCCAGCTAGAGTTATTTTCACCGACTCTAAGCCAGAAATCGAATTGGGTTTGCAA
TCCGGTCAATTCTGGAGAAAGTTCGAAGTCTACGAAGGTGACAAGAAGTTGCCAATTAAGTTGGTTTCCTACGAC
ACCGTCAAGGACTACGCTTACATCAGATTCTCCGTTTCTAACGGTACTAAGGCTGTCAAGATTGTCTCTTCCACC
CACTTCAACAACAAGGAAGAAAAGTACGACTACACTTTGATGGAATTCGCTCAACCAATTTACAACTCTGCTGAC
AAGTTCAAGACCGAAGAAGACTACAAGGCTGAAAAGTTGTTGGCTCCATACAAGAAGGCTAAGACTTTGGAAAGA
CAAGTTTACGAATTGAACAAGATCCAAGACAAGTTGCCAGAAAAGTTGAAGGCTGAATACAAGAAGAAGTTGGAA
GACACCAAGAAGGCTTTGGACGAACAAGTCAAGTCCGCTATCACCGAATTCCAAAACGTTCAACCAACTAACGAA
AAGATGACTGACTTGCAAGACACTAAGTACGTCGTCTACGAATCCGTCGAAAACAACGAATCCATGATGGACACC
TTCGTTAAGCACCCAATTAAGACTGGTATGTTGAACGGTAAGAAGTACATGGTCATGGAAACCACTAACGACGAC
TACTGGAAGGACTTCATGGTTGAAGGTCAAAGAGTCAGAACCATCTCCAAGGACGCTAAGAACAACACTAGAACC
ATTATCTTCCCATACGTTGAAGGTAAGACTTTGTACGACGCTATCGTCAAGGTTCACGTCAAGACTATTGACTAC
GACGGTCAATACCACGTTAGAATTGTTGACAAGGAAGCTTTCACCAAGGCTAACACCGACAAGTCCAACAAGAAG
GAACAACAAGACAACTCTGCTAAGAAGGAAGCTACCCCAGCTACCCCATCTAAGCCAACCCCATCTCCAGTTGAA
AAGGAATCTCAAAAGCAAGACTCCCAAAAGGACGACAACAAGCAATTGCCATCCGTCGAAAAGGAAAACGACGCG
TCTTCTGAATCCGGTAAGGGTGTCACTTTAGCTACCAAGCCAACTAAGGGTGAAGTTGAATCTTCCTCTACTACT
CCAACCAAGGTTGTCTCCACTACCCAAAACGTCGCTAAGCCAACTACCGGTTCTTCCAAGACTACCAAGGACGTT
GTCCAAACTTCTGCTGGTTCCTCTGAAGCTAAGGACTCTGCTCCATTGCAAAAGGCTAACATCAAGCACACCAAC
GACGGTCACACCCAATCCCAAAACAACAAGAACACTCAAGAAAACAAGGCTAAGTCTTAA

FIG. 8J

ATGGCTGAAGAAACTGGTGGTACCAACACTGAAGCTCAACCAAAGACCGAAGCTGTCGCTTCCCCAACCACTACC
TCTGAAAAGGCTCCAGAAACTAAGCCAGTTGCTAACGCTGTCTCCGTTTCTAACAAGGAAGTCGAAGCTCCAACC
TCCGAAACTAAGGAAGCTAAGGAAGTTAAGGAAGTCAAGGCTCCAAAGGAAACTAAGGAAGTCAAGCCAGCTGCT
AAGGCTACCAACAACACTTACCCAATTTTGAACCAAGAATTGAGAGAAGCTATTAAGAACCCAGCTATCAAGGAC
AAGGACCACTCCGCTCCAAACTCTAGACCAATCGACTTCGAAATGAAGAAGAAGGACGGTACCCAACAATTCTAC
CACTACGCGTCCTCTGTCAAGCCAGCTAGAGTTATTTTCACCGACTCTAAGCCAGAAATCGAATTGGGTTTGCAA
TCCGGTCAATTCTGGAGAAAGTTCGAAGTCTACGAAGGTGACAAGAAGTTGCCAATTAAGTTGGTTTCCTACGAC
ACCGTCAAGGACTACGCTTACATCAGATTCTCCGTTTCTAACGGTACTAAGGCTGTCAAGATTGTCTCTTCCACC
CACTTCAACAACAAGGAAGAAAAGTACGACTACACTTTGATGGAATTCGCTCAACCAATTTACAACTCTGCTGAC
AAGTTCAAGACCGAAGAAGACTACAAGGCTGAAAAGTTGTTGGCTCCATACAAGAAGGCTAAGACTTTGGAAAGA
CAAGTTTACGAATTGAACAAGATCCAAGACAAGTTGCCAGAAAAGTTGAAGGCTGAATACAAGAAGAAGTTGGAA
GACACCAAGAAGGCTTTGGACGAACAAGTCAAGTCCGCTATCACCGAATTCCAAAACGTTCAACCAACTAACGAA
AAGATGACTGACTTGCAAGACACTAAGTACGTCGTCTACGAATCCGTCGAAAACAACGAATCCATGATGGACACC
TTCGTTAAGCACCCAATTAAGACTGGTATGTTGAACGGTAAGAAGTACATGGTCATGGAAACCACTAACGACGAC
TACTGGAAGGACTTCATGGTTGAAGGTCAAAGAGTCAGAACCATCTCCAAGGACGCTAAGAACAACACTAGAACC
ATTATCTTCCCATACGTTGAAGGTAAGACTTTGTACGACGCTATCGTCAAGGTTCACGTCAAGACTATTGACTAC
GACGGTCAATACCACGTTAGAATTGTTGACAAGGAAGCTTTCACCAAGGCTAACACCGACAAGTCCAACAAGAAG
GAACAACAAGACAACTCTGCTAAGAAGGAAGCTACCCCAGCTACCCCATCTAAGCCAACCCCATCTCCAGTTGAA
AAGGAATCTCAAAAGCAAGACTCCCAAAAGGACGACAACAAGCAATTGCCATCCGTCGAAAAGGAAAACGACGCG
TCTTCTGAATCCGGTAAGGGTGTCACTTTGGCTACCAAGCCAACTAAGGGTGAAGTTGAATCTTCCTCTACTACT
CCAACCAAGGTTGTCTCCACTACCCAAAACGTCGCTAAGCCAACTACCGGCTCTTCCAAGACTACCAAGGACGTT
GTCCAAACTTCTGCTGGTTCCTCTGAAGCTAAGGACTCTGCTCCATTGCAAAAGGCTAACATCAAGCACACCAAC
GACGGTCACACCCAATCCCAAAACAACAAGAACACTCAAGAAAACAAGGCTAAGTCTTAA

FIG. 8K

ATGGCTGAAGAAACTGGTGGTACCAACACTGAAGCTCAACCAAAGACCGAAGCTGTCGCTTCCCCAACCACTACC
TCTGAAAAGGCTCCAGAAACTAAGCCAGTTGCTAACGCTGTCTCCGTTTCTAACAAGGAAGTCGAAGCTCCAACC
TCCGAAACTAAGGAAGCTAAGGAAGTTAAGGAAGTCAAGGCTCCAAAGGAAACTAAGGAAGTCAAGCCAGCTGCT
AAGGCTACCAACAACACTTACCCAATTTTGAACCAAGAATTGAGAGAAGCTATTAAGAACCCAGCTATCAAGGAC
AAGGACCACTCCGCTCCAAACTCTAGACCAATCGACTTCGAAATGAAGAAGAAGGACGGTACCCAACAATTCTAC
CACTACGCGTCCTCTGTCAAGCCAGCTAGAGTTATTTTCACCGACTCTAAGCCAGAAATCGAATTGGGTTTGCAA
TCCGGTCAATTCTGGAGAAAGTTCGAAGTCTACGAAGGTGACAAGAAGTTGCCAATTAAGTTGGTTTCCTACGAC
ACCGTCAAGGACTACGCTTACATCAGATTCTCCGTTTCTAACGGTACTAAGGCTGTCAAGATTGTCTCTTCCACC
CACTTCAACAACAAGGAAGAAAAGTACGACTACACTTTGATGGAATTCGCTCAACCAATTTACAACTCTGCTGAC
AAGTTCAAGACCGAAGAAGACTACAAGGCTGAAAAGTTGTTGGCTCCATACAAGAAGGCTAAGACTTTGGAAAGA
CAAGTTTACGAATTGAACAAGATCCAAGACAAGTTGCCAGAAAAGTTGAAGGCTGAATACAAGAAGAAGTTGGAA
GACACCAAGAAGGCTTTGGACGAACAAGTCAAGTCCGCTATCACCGAATTCCAAAACGTTCAACCAACTAACGAA
AAGATGACTGACTTGCAAGACACTAAGTACGTCGTCTACGAATCCGTCGAAAACAACGAATCCATGATGGACACC
TTCGTTAAGCACCCAATTAAGACTGGTATGTTGAACGGTAAGAAGTACATGGTCATGGAAACCACTAACGACGAC
TACTGGAAGGACTTCATGGTTGAAGGTCAAAGAGTCAGAACCATCTCCAAGGACGCTAAGAACAACACTAGAACC
ATTATCTTCCCATACGTTGAAGGTAAGACTTTGTACGACGCTATCGTCAAGGTTCACGTCAAGACTATTGACTAC
GACGGTCAATACCACGTTAGAATTGTTGACAAGGAAGCTTTCACCAAGGCTAACACCGACAAGTCCAACAAGAAG
GAACAACAAGACAACTCTGCTAAGAAGGAAGCTACCCCAGCTACCCCATCTAAGCCAACCCCATCTCCAGTTGAA
AAGGAATCTCAAAAGCAAGACTCCCAAAAGGACGACAACAAGCAATTGCCATCCGTCGAAAAGGAAAACGACGCG
TCTTCTGAATCCGGTAAGGGTGTTACTTTAGCTACCAAGCCAACTAAGGGTGAAGTTGAATCTTCCTCTACTACT
CCAACCAAGGTTGTCTCCACTACCCAAAACGTCGCTAAGCCAACTACCGGTTCTTCCAAGACTACCAAGGACGTT
GTCCAAACTTCTGCTGGTTCCTCTGAAGCTAAGGACTCTGCTCCATTGCAAAAGGCTAACATCAAGCACACCAAC
GACGGTCACACCCAATCCCAAAACAACAAGAACACTCAAGAAAACAAGGCTAAGTCTTAA

FIG. 8L

ATGGCTGAAGAAACTGGTGGTACCAACACTGAAGCTCAACCAAAGACCGAAGCTGTCGCTTCCCCAACCACTACC
TCTGAAAAGGCTCCAGAAACTAAGCCAGTTGCTAACGCTGTCTCCGTTTCTAACAAGGAAGTCGAAGCTCCAACC
TCCGAAACTAAGGAAGCTAAGGAAGTTAAGGAAGTCAAGGCTCCAAAGGAAACTAAGGAAGTCAAGCCAGCTGCT
AAGGCTACCAACAACACTTACCCAATTTTGAACCAAGAATTGAGAGAAGCTATTAAGAACCCAGCTATCAAGGAC
AAGGACCACTCCGCTCCAAACTCTAGACCAATCGACTTCGAAATGAAGAAGGACGGTACCCAACAATTCTAC
CACTACGCGTCCTCTGTCAAGCCAGCTAGAGTTATTTTCACCGACTCTAAGCCAGAAATCGAATTGGGTTTGCAA
TCCGGTCAATTCTGGAGAAAGTTCGAAGTCTACGAAGGTGACAAGAAGTTGCCAATTAAGTTGGTTTCCTACGAC
ACCGTCAAGGACTACGCTTACATCAGATTCTCCGTTTCTAACGGTACTAAGGCTGTCAAGATTGTCTCTTCCACC
CACTTCAACAACAAGGAAGAAAAGTACGACTACACTTTGATGGAATTCGCTCAACCAATTTACAACTCTGCTGAC
AAGTTCAAGACCGAAGAAGACTACAAGGCTGAAAAGTTGTTGGCTCCATACAAGAAGGCTAAGACTTTGGAAAGA
CAAGTTTACGAATTGAACAAGATCCAAGACAAGTTGCCAGAAAAGTTGAAGGCTGAATACAAGAAGAAGTTGGAA
GACACCAAGAAGGCTTTGGACGAACAAGTCAAGTCCGCTATCACCGAATTCCAAAACGTTCAACCAACTAACGAA
AAGATGACTGACTTGCAAGACACTAAGTACGTCGTCTACGAATCCGTCGAAAACAACGAATCCATGATGGACACC
TTCGTTAAGCACCCAATTAAGACTGGTATGTTGAACGGTAAGAAGTACATGGTCATGGAAACCACTAACGACGAC
TACTGGAAGGACTTCATGGTTGAAGGTCAAAGAGTCAGAACCATCTCCAAGGACGCTAAGAACAACACTAGAACC
ATTATCTTCCCATACGTTGAAGGTAAGACTTTGTACGACGCTATCGTCAAGGTTCACGTCAAGACTATTGACTAC
GACGGTCAATACCACGTTAGAATTGTTGACAAGGAAGCTTTCACCAAGGCTAACACCGACAAGTCCAACAAGAAG
GAACAACAAGACAACTCTGCTAAGAAGGAAGCTACCCCAGCTACCCCATCTAAGCCAACCCCATCTCCAGTTGAA
AAGGAATCTCAAAAGCAAGACTCCCAAAAGGACGACAACAAGCAATTGCCATCCGTCGAAAAGGAAAACGACGCG
TCTTCTGAATCCGGTAAGGGTGTTACTTTGGCTACCAAGCCAACTAAGGGTGAAGTTGAATCTTCCTCTACTACT
CCAACCAAGGTTGTCTCCACTACCCAAAACGTCGCTAAGCCAACTACCGGCTCTTCCAAGACTACCAAGGACGTT
GTCCAAACTTCTGCTGGTTCCTCTGAAGCTAAGGACTCTGCTCCATTGCAAAAGGCTAACATCAAGCACACCAAC
GACGGTCACACCCAATCCCAAAACAACAAGAACACTCAAGAAAACAAGGCTAAGTCTTAA

FIG. 8M

ATGGCTGAAGAAACTGGTGGTACCAACACTGAAGCTCAACCAAAGACCGAAGCTTTGGCTTCCCCAACCACTACC
ACTGAAAAGGCTCCAGAAACTAAGCCAGTTGCTAACGCTGTCTCCGTTTCTAACAAGGAAGTCGAAGCTCCAACC
TCCGAAACTAAGGAAGCTAAGGAAGTTAAGGAAGTCAAGGCTCCAAAGGAAACTAAGGCTGTCAAGCCAGCTGCT
AAGGCTGACAACAACACTTACCCAATTTTGAACCAAGAATTGAGAGAAGCTATTAAGAACCCAGCTATCAAGGAC
AAGGACCACTCCGCTCCAAACTCTAGACCAATCGACTTCGAAATGAAGAAGGAAAACGGTGAACAACAATTCTAC
CACTACGCGTCCTCTGTCAAGCCAGCTAGAGTTATTTTCACCGACTCTAAGCCAGAAATCGAATTGGGTTTGCAA
TCCGGTCAATTCTGGAGAAAGTTCGAAGTCTACGAAGGTGACAAGAAGTTGCCAATTAAGTTGGTTTCCTACGAC
ACCGTCAAGGACTACGCTTACATCAGATTCTCCGTTTCTAACGGTACTAAGGCTGTCAAGATTGTCTCTTCCACC
CACTTCAACAACAAGGAAGAAAAGTACGACTACACTTTGATGGAATTCGCTCAACCAATTTACAACTCTGCTGAC
AAGTTCAAGACCGAAGAAGACTACAAGGCTGAAAAGTTGTTGGCTCCATACAAGAAGGCTAAGACTTTGGAAAGA
CAAGTTTACGAATTGAACAAGATCCAAGACAAGTTGCCAGAAAAGTTGAAGGCTGAATACAAGAAGAAGTTGGAA
GACACCAAGAAGGCTTTGGACGAACAAGTCAAGTCCGCTATCACCGAATTCCAAAACGTTCAACCAACTAACGAA
AAGATGACTGACTTGCAAGACACTAAGTACGTCGTCTACGAATCCGTCGAAAACAACGAATCCATGATGGACACC
TTCGTTAAGCACCCAATTAAGACTGGTATGTTGAACGGTAAGAAGTACATGGTCATGGAAACCACTAACGACGAC
TACTGGAAGGACTTCATGGTTGAAGGTCAAAGAGTCAGAACCATCTCCAAGGACGCTAAGAACAACACTAGAACC
ATTATCTTCCCATACGTTGAAGGTAAGACTTTGTACGACGCTATCGTCAAGGTTCACGTCAAGACTATTGACTAC
GACGGTCAATACCACGTTAGAATTGTTGACAAGGAAGCTTTCACCAAGGCTAACACCGACAAGTCCAACAAGAAG
GAACAACAAGACAACTCTGCTAAGAAGGAAGCTACCCCAGCTACCCCATCTAAGCCAACCCCATCTCCAGTTGAA
AAGGAATCTCAAAAGCAAGACTCCCAAAAGGACGACAACAAGCAATTGCCATCCGTCGAAAAGGAAAACGACGCG
TCTTCTGAATCCGGTAAGGACAAGACTCCAGCTACCAAGCCAGCTAAGGGTGAAGTTGAATCTTCCTCTACTACT
CCAACCAAGGTTGTCTCCACTACCCAAAACGTCGCTAAGCCAACTACCGCTTCTTCCAAGACTACCAAGGACGTT
GTCCAAACTTCTGCTGGTTCCTCTGAAGCTAAGGACTCTGCTCCATTGCAAAAGGCTAACATCAAGAACACCAAC
GACGGTCACACCCAATCCCAAAACAACAAGAACACTCAAGAAAACAAGGCTAAGTCTTAA

FIG. 8N

ATGGCTGAAGAAACTGGTGGTACCAACACTGAAGCTCAACCAAAGACCGAAGCTTTGGCTTCCCCAACCACTACC
ACTGAAAAGGCTCCAGAAACTAAGCCAGTTGCTAACGCTGTCTCCGTTTCTAACAAGGAAGTCGAAGCTCCAACC
TCCGAAACTAAGGAAGCTAAGGAAGTTAAGGAAGTCAAGGCTCCAAAGGAAACTAAGGCTGTCAAGCCAGCTGCT
AAGGCTGACAACAACACTTACCCAATTTTGAACCAAGAATTGAGAGAAGCTATTAAGAACCCAGCTATCAAGGAC
AAGGACCACTCCGCTCCAAACTCTAGACCAATCGACTTCGAAATGAAGAAGGAAAACGGTGAACAACAATTCTAC
CACTACGCGTCCTCTGTCAAGCCAGCTAGAGTTATTTTCACCGACTCTAAGCCAGAAATCGAATTGGGTTTGCAA
TCCGGTCAATTCTGGAGAAAGTTCGAAGTCTACGAAGGTGACAAGAAGTTGCCAATTAAGTTGGTTTCCTACGAC
ACCGTCAAGGACTACGCTTACATCAGATTCTCCGTTTCTAACGGTACTAAGGCTGTCAAGATTGTCTCTTCCACC
CACTTCAACAACAAGGAAGAAAAGTACGACTACACTTTGATGGAATTCGCTCAACCAATTTACAACTCTGCTGAC
AAGTTCAAGACCGAAGAAGACTACAAGGCTGAAAAGTTGTTGGCTCCATACAAGAAGGCTAAGACTTTGGAAAGA
CAAGTTTACGAATTGAACAAGATCCAAGACAAGTTGCCAGAAAAGTTGAAGGCTGAATACAAGAAGAAGTTGGAA
GACACCAAGAAGGCTTTGGACGAACAAGTCAAGTCCGCTATCACCGAATTCCAAAACGTTCAACCAACTAACGAA
AAGATGACTGACTTGCAAGACACTAAGTACGTCGTCTACGAATCCGTCGAAAACAACGAATCCATGATGGACACC
TTCGTTAAGCACCCAATTAAGACTGGTATGTTGAACGGTAAGAAGTACATGGTCATGGAAACCACTAACGACGAC
TACTGGAAGGACTTCATGGTTGAAGGTCAAAGAGTCAGAACCATCTCCAAGGACGCTAAGAACAACACTAGAACC
ATTATCTTCCCATACGTTGAAGGTAAGACTTTGTACGACGCTATCGTCAAGGTTCACGTCAAGACTATTGACTAC
GACGGTCAATACCACGTTAGAATTGTTGACAAGGAAGCTTTCACCAAGGCTAACACCGACAAGTCCAACAAGAAG
GAACAACAAGACAACTCTGCTAAGAAGGAAGCTACCCCAGCTACCCCATCTAAGCCAACCCCATCTCCAGTTGAA
AAGGAATCTCAAAAGCAAGACTCCCAAAAGGACGACAACAAGCAATTGCCATCCGTCGAAAAGGAAAACGACGCG
TCTTCTGAATCCGGTAAGTAA

FIG. 8O

ATGGCTGAAGAAACTGGTGGTACCAACACTGAAGCTCAACCAAAGACCGAAGCTTTGGCTTCCCCAACCACTACC
ACTGAAAAGGCTCCAGAAACTAAGCCAGTTGCTAACGCTGTCTCCGTTTCTAACAAGGAAGTCGAAGCTCCAACC
TCCGAAACTAAGGAAGCTAAGGAAGTTAAGGAAGTCAAGGCTCCAAAGGAAACTAAGGCTGTCAAGCCAGCTGCT
AAGGCTGACAACAACACTTACCCAATTTTGAACCAAGAATTGAGAGAAGCTATTAAGAACCCAGCTATCAAGGAC
AAGGACCACTCCGCTCCAAACTCTAGACCAATCGACTTCGAAATGAAGAAGGAAAACGGTGAACAACAATTCTAC
CACTACGCGTCCTCTGTCAAGCCAGCTAGAGTTATTTTCACCGACTCTAAGCCAGAAATCGAATTGGGTTTGCAA
TCCGGTCAATTCTGGAGAAAGTTCGAAGTCTACGAAGGTGACAAGAAGTTGCCAATTAAGTTGGTTTCCTACGAC
ACCGTCAAGGACTACGCTTACATCAGATTCTCCGTTTCTAACGGTACTAAGGCTGTCAAGATTGTCTCTTCCACC
CACTTCAACAACAAGGAAGAAAAGTACGACTACACTTTGATGGAATTCGCTCAACCAATTTACAACTCTGCTGAC
AAGTTCAAGACCGAAGAAGACTACAAGGCTGAAAAGTTGTTGGCTCCATACAAGAAGGCTAAGACTTTGGAAAGA
CAAGTTTACGAATTGAACAAGATCCAAGACAAGTTGCCAGAAAAGTTGAAGGCTGAATACAAGAAGAAGTTGGAA
GACACCAAGAAGGCTTTGGACGAACAAGTCAAGTCCGCTATCACCGAATTCCAAAACGTTCAACCAACTAACGAA
AAGATGACTGACTTGCAAGACACTAAGTACGTCGTCTACGAATCCGTCGAAAACAACGAATCCATGATGGACACC
TTCGTTAAGCACCCAATTAAGACTGGTATGTTGAACGGTAAGAAGTACATGGTCATGGAAACCACTAACGACGAC
TACTGGAAGGACTTCATGGTTGAAGGTCAAAGAGTCAGAACCATCTCCAAGGACGCTAAGAACAACACTAGAACC
ATTATCTTCCCATACGTTGAAGGTAAGACTTTGTACGACGCTATCGTCAAGGTTCACGTCAAGACTATTGACTAC
GACGGTCAATACCACGTTAGAATTGTTGACAAGGAAGCTTTCACCAAGGCTAACACCGACAAGTCCAACAAGAAG
GAACAACAAGACAACTCTGCTAAGAAGGAAGCTACCCCAGCTACCCCATCTAAGCCAACCCCATAA

FIG. 8P

ATGGGTAACAAGCAACAAAAGGAATTCAAGTCTTTCTACTCCATTAGAAAGTCTTCCTTGGGTGTTGCTTCTGTC
GCTATCTCCACCTTGTTGTTGTTGATGTCTAACGGTGAAGCTCAAGCTGCTGAAGAAACTGGTGGTACCAACACT
GAAGCTCAACCAAAGACCGAAGCTTTGGCTTCCCCAACCACTACCACTGAAAAGGCTCCAGAAACTAAGCCAGTT
GCTAACGCTGTCTCCGTTTCTAACAAGGAAGTCGAAGCTCCAACCTCCGAAACTAAGGAAGCTAAGGAAGTTAAG
GAAGTCAAGGCTCCAAAGGAAACTAAGGCTGTCAAGCCAGCTGCTAAGGCTGACAACAACACTTACCCAATTTTG
AACCAAGAATTGAGAGAAGCTATTAAGAACCCAGCTATCAAGGACAAGGACCACTCCGCTCCAAACTCTAGACCA
ATCGACTTCGAAATGAAGAAGGAAAACGGTGAACAACAATTCTACCACTACGCGTCCTCTGTCAAGCCAGCTAGA
GTTATTTTCACCGACTCTAAGCCAGAAATCGAATTGGGTTTGCAATCCGGTCAATTCTGGAGAAAGTTCGAAGTC
TACGAAGGTGACAAGAAGTTGCCAATTAAGTTGGTTTCCTACGACACCGTCAAGGACTACGCTTACATCAGATTC
TCCGTTTCTAACGGTACTAAGGCTGTCAAGATTGTCTCTTCCACCCACTTCAACAACAAGGAAGAAAAGTACGAC
TACACTTTGATGGAATTCGCTCAACCAATTTACAACTCTGCTGACAAGTTCAAGACCGAAGAAGACTACAAGGCT
GAAAAGTTGTTGGCTCCATACAAGAAGGCTAAGACTTTGGAAAGACAAGTTTACGAATTGAACAAGATCCAAGAC
AAGTTGCCAGAAAAGTTGAAGGCTGAATACAAGAAGAAGTTGGAAGACACCAAGAAGGCTTTGGACGAACAAGTC
AAGTCCGCTATCACCGAATTCCAAAACGTTCAACCAACTAACGAAAAGATGACTGACTTGCAAGACACTAAGTAC
GTCGTCTACGAATCCGTCGAAAACAACGAATCCATGATGGACACCTTCGTTAAGCACCCAATTAAGACTGGTATG
TTGAACGGTAAGAAGTACATGGTCATGGAAACCACTAACGACGACTACTGGAAGGACTTCATGGTTGAAGGTCAA
AGAGTCAGAACCATCTCCAAGGACGCTAAGAACAACACTAGAACCATTATCTTCCCATACGTTGAAGGTAAGACT
TTGTACGACGCTATCGTCAAGGTTCACGTCAAGACTATTGACTACGACGGTCAATACCACGTTAGAATTGTTGAC
AAGGAAGCTTTCACCAAGGCTAACACCGACAAGTCCAACAAGAAGGAACAACAAGACAACTCTGCTAAGAAGGAA
GCTACCCCAGCTACCCCATCTAAGCCAACCCCATCTCCAGTTGAAAAGGAATCTCAAAAGCAAGACTCCCAAAAG
GACGACAACAAGCAATTGCCATCCGTCGAAAAGGAAAACGACGCGTCTTCTGAATCCGGTAAGGACAAGACTCCA
GCTACCAAGCCAGCTAAGGGTGAAGTTGAATCTTCCTCTACTACTCCAACCAAGGTTGTCTCCACTACCCAAAAC
GTCGCTAAGCCAACTACCGCTTCTTCCAAGACTACCAAGGACGTTGTCCAAACTTCTGCTGGTTCCTCTGAAGCT
AAGGACTCTGCTCCATTGCAAAAGGCTAACATCAAGAACACCAACGACGGTCACACCCAATCCCAAAACAACAAG
AACACTCAAGAAAACAAGGCTAAGTCTTTGCCACAAACCGGTGAAGAATCCAACAAGGACATGACCTTGCCATTG
ATGGCTTTGTTGGCTTTGTCTTCCATCGTTGCTTTCGTCTTGCCAAGAAAGAGAAAGAACTAA

FIG. 8Q

ATGGCTGAAGAAACTGGTGGTACCAACACTGAAGCTCAACCAAAGACCGAAGCTGTCGCTTCCCCAACCACTACC
TCTGAAAAGGCTCCAGAAACTAAGCCAGTTGCTAACGCTGTCTCCGTTTCTAACAAGGAAGTCGAAGCTCCAACC
TCCGAAACTAAGGAAGCTAAGGAAGTTAAGGAAGTCAAGGCTCCAAAGGAAACTAAGGCTGTCAAGCCAGCTACT
AAGGCTGACAACAACACTTACCCAATTTTGAACCAAGAATTGAGAGAAGCTATTAAGAACCCAGCTATCAAGGAC
AAGGACCACTCCGCTCCAAACTCTAGACCAATCGACTTCGAAATGAAGAAGGAAAACGGTGAACAACAATTCTAC
CACTACGCGTCCTCTGTCAAGCCAGCTAGAGTTATTTTCACCGACTCTAAGCCAGAAATCGAATTGGGTTTGCAA
TCCGGTCAATTCTGGAGAAAGTTCGAAGTCTACGAAGGTGACAAGAAGTTGCCAATTAAGTTGGTTTCCTACGAC
ACCGTCAAGGACTACGCTTACATCAGATTCTCCGTTTCTAACGGTACTAAGGCTGTCAAGATTGTCTCTTCCACC
CACTTCAACAACAAGGAAGAAAAGTACGACTACACTTTGATGGAATTCGCTCAACCAATTTACAACTCTGCTGAC
AAGTTCAAGACCGAAGAAGACTACAAGGCTGAAAAGTTGTTGGCTCCATACAAGAAGGCTAAGACTTTGGAAAGA
CAAGTTTACGAATTGAACAAGATCCAAGACAAGTTGCCAGAAAAGTTGAAGGCTGAATACAAGAAGAAGTTGGAA
GACACCAAGAAGGCTTTGGACGAACAAGTCAAGTCCGCTATCACCGAATTCCAAAACGTTCAACCAACTAACGAA
AAGATGACTGACTTGCAAGACACTAAGTACGTCGTCTACGAATCCGTCGAAAACAACGAATCCATGATGGACACC
TTCGTTAAGCACCCAATTAAGACTGGTATGTTGAACGGTAAGAAGTACATGGTCATGGAAACCACTAACGACGAC
TACTGGAAGGACTTCATGGTTGAAGGTCAAAGAGTCAGAACCATCTCCAAGGACGCTAAGAACAACACTAGAACC
ATTATCTTCCCATACGTTGAAGGTAAGACTTTGTACGACGCTATCGTCAAGGTTCACGTCAAGACTATTGACTAC
GACGGTCAATACCACGTTAGAATTGTTGACAAGGAAGCTTTCACCAAGGCTAACACCGACAAGTCCAACAAGAAG
GAACAACAAGACAACTCTGCTAAGAAGGAAGCTACCCCAGCTACCCCATCTAAGCCAACCCCATCTCCAGTTGAA
AAGGAATCTCAAAAGCAAGACTCCCAAAAGGACGACAACAAGCAATTGCCATCCGTCGAAAAGGAAAACGACGCG
TCTTCTGAATCCGGTAAGGACAAGACTCCAGCTACCAAGCCAGCTAAGGGTGAAGTTGAATCTTCCTCTACTACT
CCAACCAAGGTTGTCTCCACTACCCAAAACGTCGCTAAGCCAACTACCGCTTCTTCCAAGACTACCAAGGACGTT
GTCCAAACTTCTGCTGGTTCCTCTGAAGCTAAGGACTCTGCTCCATTGCAAAAGGCTAACATCAAGAACACCAAC
GACGGTCACACCCAATCCCAAAACAACAAGAACACTCAAGAAAACAAGGCTAAGTCTTAA

FIG. 8R

ATGGCTGAAGAAACTGGTGGTACCAACACTGAAGCTCAACCAAAGACCGAAGCTGTCGCTTCCCCAACCACTACC
TCTGAAAAGGCTCCAGAAACTAAGCCAGTTGCTAACGCTGTCTCCGTTTCTAACAAGGAAGTCGAAGCTCCAACC
TCCGAAACTAAGGAAGCTAAGGAAGTTAAGGAAGTCAAGGCTCCAAAGGAAACTAAGGCTGTCAAGCCAGCTACT
AAGGCTGACAACAACACTTACCCAATTTTGAACCAAGAATTGAGAGAAGCTATTAAGAACCCAGCTATCAAGGAC
AAGGACCACTCCGCTCCAAACTCTAGACCAATCGACTTCGAAATGAAGAAGGAAAACGGTGAACAACAATTCTAC
CACTACGCGTCCTCTGTCAAGCCAGCTAGAGTTATTTTCACCGACTCTAAGCCAGAAATCGAATTGGGTTTGCAA
TCCGGTCAATTCTGGAGAAAGTTCGAAGTCTACGAAGGTGACAAGAAGTTGCCAATTAAGTTGGTTTCCTACGAC
ACCGTCAAGGACTACGCTTACATCAGATTCTCCGTTTCTAACGGTACTAAGGCTGTCAAGATTGTCTCTTCCACC
CACTTCAACAACAAGGAAGAAAAGTACGACTACACTTTGATGGAATTCGCTCAACCAATTTACAACTCTGCTGAC
AAGTTCAAGACCGAAGAAGACTACAAGGCTGAAAAGTTGTTGGCTCCATACAAGAAGGCTAAGACTTTGGAAAGA
CAAGTTTACGAATTGAACAAGATCCAAGACAAGTTGCCAGAAAAGTTGAAGGCTGAATACAAGAAGAAGTTGGAA
GACACCAAGAAGGCTTTGGACGAACAAGTCAAGTCCGCTATCACCGAATTCCAAAACGTTCAACCAACTAACGAA
AAGATGACTGACTTGCAAGACACTAAGTACGTCGTCTACGAATCCGTCGAAAACAACGAATCCATGATGGACACC
TTCGTTAAGCACCCAATTAAGACTGGTATGTTGAACGGTAAGAAGTACATGGTCATGGAAACCACTAACGACGAC
TACTGGAAGGACTTCATGGTTGAAGGTCAAAGAGTCAGAACCATCTCCAAGGACGCTAAGAACAACACTAGAACC
ATTATCTTCCCATACGTTGAAGGTAAGACTTTGTACGACGCTATCGTCAAGGTTCACGTCAAGACTATTGACTAC
GACGGTCAATACCACGTTAGAATTGTTGACAAGGAAGCTTTCACCAAGGCTAACACCGACAAGTCCAACAAGAAG
GAACAACAAGACAACTCTGCTAAGAAGGAAGCTACCCCAGCTACCCCATCTAAGCCAACCCCATCTCCAGTTGAA
AAGGAATCTCAAAAGCAAGACTCCCAAAAGGACGACAACAAGCAATTGCCATCCGTCGAAAAGGAAAACGACGCG
TCTTCTGAATCCGGTAAGTAA

FIG. 8S

ATGGCTGAAGAAACTGGTGGTACCAACACTGAAGCTCAACCAAAGACCGAAGCTGTCGCTTCCCCAACCACTACC
TCTGAAAAGGCTCCAGAAACTAAGCCAGTTGCTAACGCTGTCTCCGTTTCTAACAAGGAAGTCGAAGCTCCAACC
TCCGAAACTAAGGAAGCTAAGGAAGTTAAGGAAGTCAAGGCTCCAAAGGAAACTAAGGCTGTCAAGCCAGCTACT
AAGGCTGACAACAACACTTACCCAATTTTGAACCAAGAATTGAGAGAAGCTATTAAGAACCCAGCTATCAAGGAC
AAGGACCACTCCGCTCCAAACTCTAGACCAATCGACTTCGAAATGAAGAAGGAAAACGGTGAACAACAATTCTAC
CACTACGCGTCCTCTGTCAAGCCAGCTAGAGTTATTTTCACCGACTCTAAGCCAGAAATCGAATTGGGTTTGCAA
TCCGGTCAATTCTGGAGAAAGTTCGAAGTCTACGAAGGTGACAAGAAGTTGCCAATTAAGTTGGTTTCCTACGAC
ACCGTCAAGGACTACGCTTACATCAGATTCTCCGTTTCTAACGGTACTAAGGCTGTCAAGATTGTCTCTTCCACC
CACTTCAACAACAAGGAAGAAAAGTACGACTACACTTTGATGGAATTCGCTCAACCAATTTACAACTCTGCTGAC
AAGTTCAAGACCGAAGAAGACTACAAGGCTGAAAAGTTGTTGGCTCCATACAAGAAGGCTAAGACTTTGGAAAGA
CAAGTTTACGAATTGAACAAGATCCAAGACAAGTTGCCAGAAAAGTTGAAGGCTGAATACAAGAAGAAGTTGGAA
GACACCAAGAAGGCTTTGGACGAACAAGTCAAGTCCGCTATCACCGAATTCCAAAACGTTCAACCAACTAACGAA
AAGATGACTGACTTGCAAGACACTAAGTACGTCGTCTACGAATCCGTCGAAAACAACGAATCCATGATGGACACC
TTCGTTAAGCACCCAATTAAGACTGGTATGTTGAACGGTAAGAAGTACATGGTCATGGAAACCACTAACGACGAC
TACTGGAAGGACTTCATGGTTGAAGGTCAAAGAGTCAGAACCATCTCCAAGGACGCTAAGAACAACACTAGAACC
ATTATCTTCCCATACGTTGAAGGTAAGACTTTGTACGACGCTATCGTCAAGGTTCACGTCAAGACTATTGACTAC
GACGGTCAATACCACGTTAGAATTGTTGACAAGGAAGCTTTCACCAAGGCTAACACCGACAAGTCCAACAAGAAG
GAACAACAAGACAACTCTGCTAAGAAGGAAGCTACCCCAGCTACCCCATCTAAGCCAACCCCATAA

FIG. 8T

ATGGGTAACAAGCAACAAAAGGAATTCAAGTCTTTCTACTCCATTAGAAAGTCTTCCTTGGGTGTTGCTTCTGTC
GCTATCTCCACCTTGTTGTTGTTGATGTCTAACGGTGAAGCTCAAGCTGCTGAAGAAACTGGTGGTACCAACACT
GAAGCTCAACCAAAGACCGAAGCTGTCGCTTCCCCAACCACTACCTCTGAAAAGGCTCCAGAAACTAAGCCAGTT
GCTAACGCTGTCTCCGTTTCTAACAAGGAAGTCGAAGCTCCAACCTCCGAAACTAAGGAAGCTAAGGAAGTTAAG
GAAGTCAAGGCTCCAAAGGAAACTAAGGCTGTCAAGCCAGCTACTAAGGCTGACAACAACACTTACCCAATTTTG
AACCAAGAATTGAGAGAAGCTATTAAGAACCCAGCTATCAAGGACAAGGACCACTCCGCTCCAAACTCTAGACCA
ATCGACTTCGAAATGAAGAAGGAAAACGGTGAACAACAATTCTACCACTACGCGTCCTCTGTCAAGCCAGCTAGA
GTTATTTTCACCGACTCTAAGCCAGAAATCGAATTGGGTTTGCAATCCGGTCAATTCTGGAGAAAGTTCGAAGTC
TACGAAGGTGACAAGAAGTTGCCAATTAAGTTGGTTTCCTACGACACCGTCAAGGACTACGCTTACATCAGATTC
TCCGTTTCTAACGGTACTAAGGCTGTCAAGATTGTCTCTTCCACCCACTTCAACAACAAGGAAGAAAAGTACGAC
TACACTTTGATGGAATTCGCTCAACCAATTTACAACTCTGCTGACAAGTTCAAGACCGAAGAAGACTACAAGGCT
GAAAAGTTGTTGGCTCCATACAAGAAGGCTAAGACTTTGGAAAGACAAGTTTACGAATTGAACAAGATCCAAGAC
AAGTTGCCAGAAAAGTTGAAGGCTGAATACAAGAAGAAGTTGGAAGACACCAAGAAGGCTTTGGACGAACAAGTC
AAGTCCGCTATCACCGAATTCCAAAACGTTCAACCAACTAACGAAAAGATGACTGACTTGCAAGACACTAAGTAC
GTCGTCTACGAATCCGTCGAAAACAACGAATCCATGATGGACACCTTCGTTAAGCACCCAATTAAGACTGGTATG
TTGAACGGTAAGAAGTACATGGTCATGGAAACCACTAACGACGACTACTGGAAGGACTTCATGGTTGAAGGTCAA
AGAGTCAGAACCATCTCCAAGGACGCTAAGAACAACACTAGAACCATTATCTTCCCATACGTTGAAGGTAAGACT
TTGTACGACGCTATCGTCAAGGTTCACGTCAAGACTATTGACTACGACGGTCAATACCACGTTAGAATTGTTGAC
AAGGAAGCTTTCACCAAGGCTAACACCGACAAGTCCAACAAGAAGGAACAACAAGACAACTCTGCTAAGAAGGAA
GCTACCCCAGCTACCCCATCTAAGCCAACCCCATCTCCAGTTGAAAAGGAATCTCAAAAGCAAGACTCCCAAAAG
GACGACAACAAGCAATTGCCATCCGTCGAAAAGGAAAACGACGCGTCTTCTGAATCCGGTAAGGACAAGACTCCA
GCTACCAAGCCAGCTAAGGGTGAAGTTGAATCTTCCTCTACTACTCCAACCAAGGTTGTCTCCACTACCCAAAAC
GTCGCTAAGCCAACTACCGCTTCTTCCAAGACTACCAAGGACGTTGTCCAAACTTCTGCTGGTTCCTCTGAAGCT
AAGGACTCTGCTCCATTGCAAAAGGCTAACATCAAGAACACCAACGACGGTCACACCCAATCCCAAAACAACAAG
AACACTCAAGAAAACAAGGCTAAGTCTTTGCCACAAACCGGTGAAGAATCCAACAAGGACATGACCTTGCCATTG
ATGGCTTTGTTGGCTTTGTCTTCCATCGTTGCTTTCGTCTTGCCAAGAAAGAGAAAGAACTAA

FIG. 8U

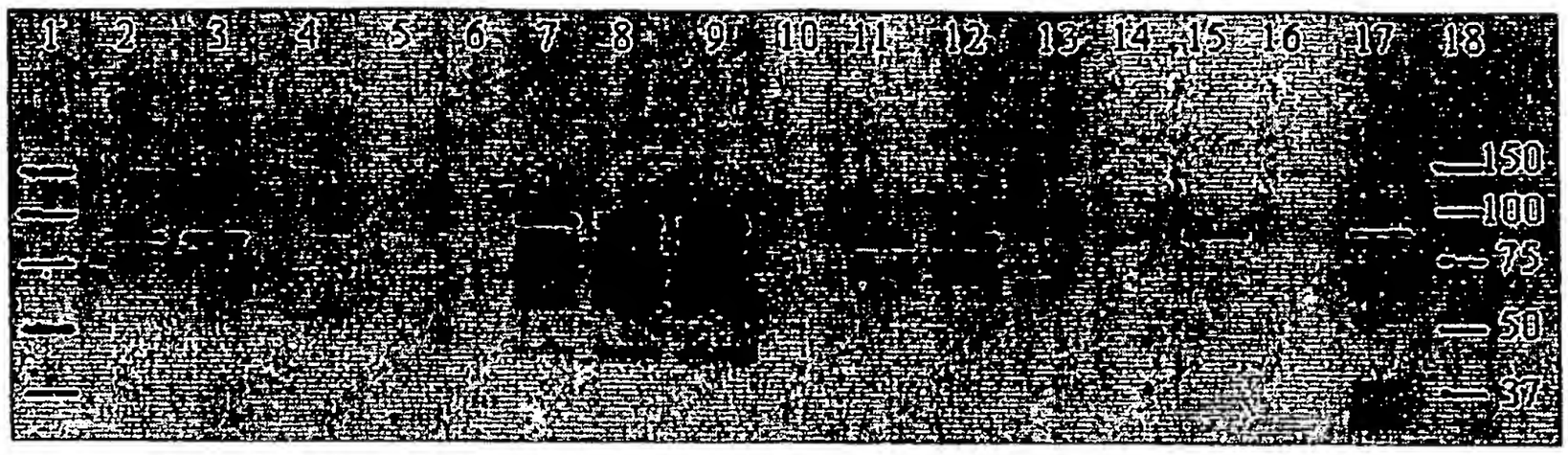

FIG. 9

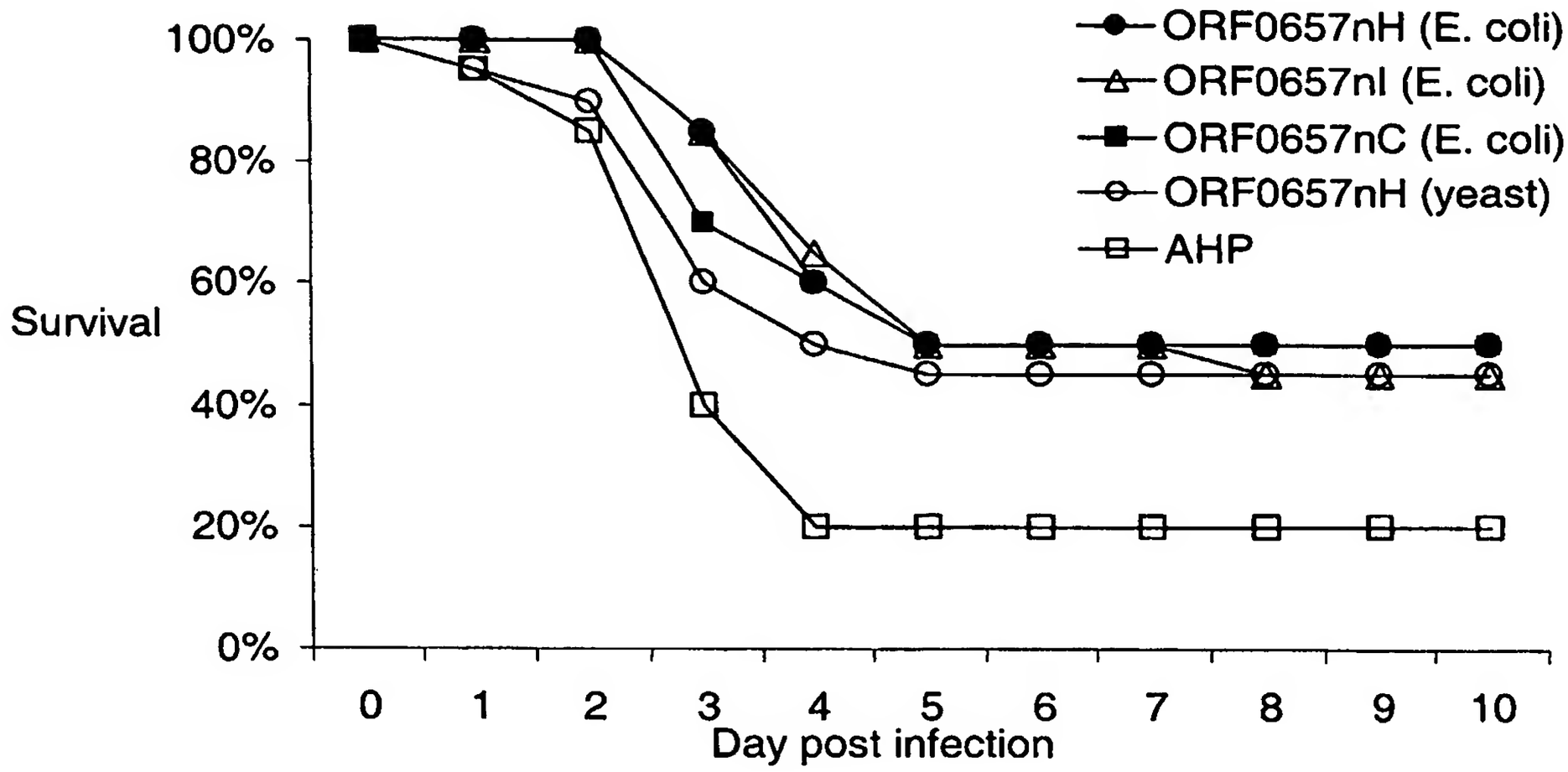
100%
80%
60%
40%
20%
0%
Survival
0
1
2
3
4
5
6
7
8
9
10
Day post infection
ORF0657nH (E. coli)
ORF0657nI (E. coli)
ORF0657nC (E. coli)
ORF0657nH (yeast)
AHP

FIG. 10

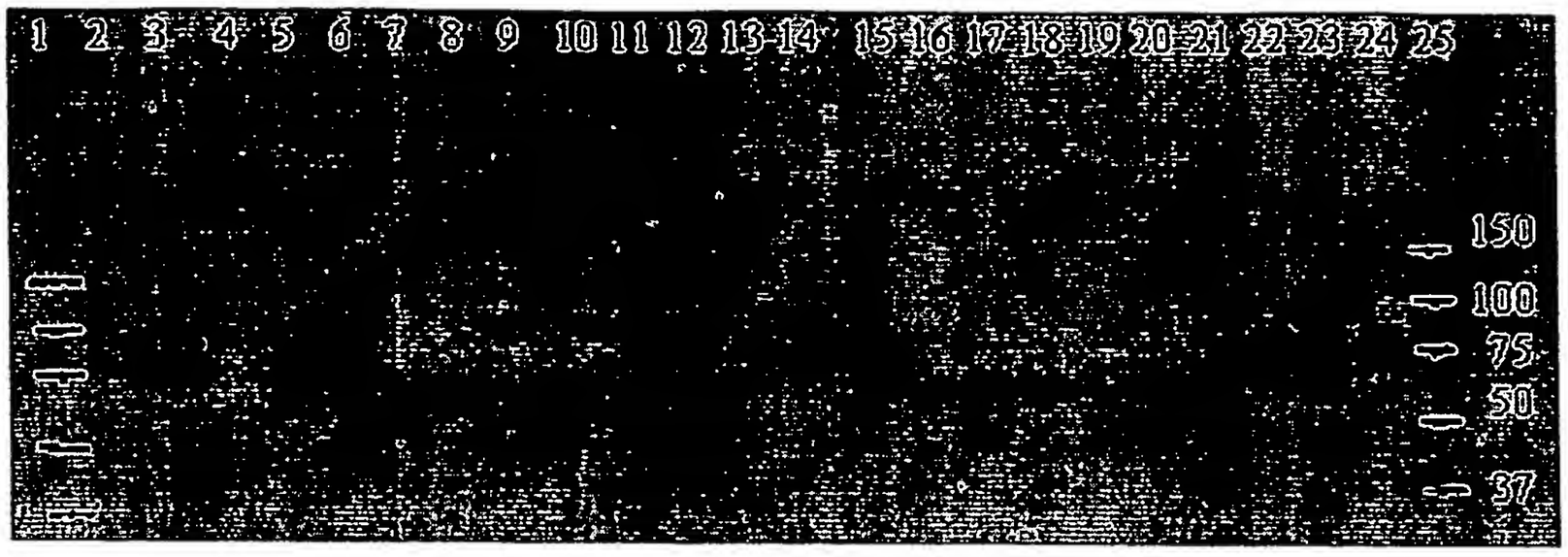
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
150
100
75
50
37

FIG. 11

immunogen	animal #	imm. day 0	day 9	imm. wk 4	wk 8	wk 12	wk 16	wk 20	imm. wk 24	wk 28	wk 32	wk 36
AHP	99R018	20,000	20,000	20,000	30,000		40,000	40,000	40,000	20,000	30,000	20,000
	00R015	40,000	40,000	40,000	40,000		40,000	40,000	40,000	40,000	40,000	40,000
	00-0163	20,000	20,000	20,000	20,000		15,000	10,000	20,000	20,000	20,000	20,000
	GMT	**25,198**	**25,198**	**25,198**	**28,845**		**28,845**	**25,198**	**31,748**	**25,198**	**28,845**	**25,198**
		imm.		imm.					imm.			
ORF0657nC	01-0024	20,000	40,000	80,000	80,000	80,000	60,000	60,000	60,000	80,000	40,000	40,000
from E. coli	00-R014	40,000	80,000	160,000	160,000	160,000	120,000	80,000	80,000	160,000	160,000	160,000
on AHP	00-R023	20,000	80,000	160,000	160,000	80,000	60,000	40,000	40,000	120,000	80,000	80,000
	GMT	**25,198**	**63,496**	**126,992**	**126,992**	**100,794**	**75,595**	**57,690**	**57,690**	**115,380**	**80,000**	**80,000**

		imm.				
0657nH	96-R044	10,000	40,000	120,000	120,000	160,000
from yeast	96-R045	7,500	80,000	80,000	60,000	80,000
on AHP	96-R047	20,000	80,000	160,000	120,000	160,000
	GMT	**11,447**	**63,496**	**115,380**	**95,244**	**126,992**

FIG. 12